

GENERAL NOTES: General Contractor and subcontractors shall verify existing field conditions prior to the start of construction and shall report any discrepancies to the Architect immediately. General Contractor shall cross-reference the various disciplines' plans herein and reviewed shop drawings prior to starting construction/phase of construction and shall report any discrepancies to the Architect immediately. Only contract documents approved for construction and reviewed shop drawings shall be used for construction. General Contractor shall be responsible for distribution of said documents and updates to the field for construction. It shall be the responsibility of the General Contractor to coordinate the subcontractor work with these project documents. Reference civil drawings for site work, including the building location on the site. No products containing asbestos shall be installed in, or used during the construction of this project. It shall be the responsibility of the General Contractor to certify to the Owner that this requirement has been complied with. Dimensions are to the finish or center of objects unless noted otherwise on the plans. DO NOT scale drawings. The word "align" as used in these documents shall supersede dimensional information. Code Compliance - The Work shall be governed by all applicable local, city, state and national laws and codes. These authorities include, but are not limited to, the National Electric Code, the American Concrete Institute, National Fire Protection Association, or any other authority of body having jurisdiction over Work. The building and parking lot shall comply with the ADA regulation (Accessibility for Handicapped). SPECIFICATIONS: 00200 - INSTRUCTIONS TO BIDDERS AIA Document A701, "Instructions to Bidders," is hereby incorporated into the Procurement and Contracting Requirements by reference in addition to the requirements listed below. Before submitting bid, it is important that bidder visit the site, carefully examine plans and fully inform himself as to all existing condition and limitations. The Bidder shall investigate all required fees, permits, and regulatory requirements of authorities having jurisdiction and properly include in the submitted bid. The cost of such fees, permits, and requirements are not provided by Owner unless specifically directed otherwise. Bids shall be considered inclusive of all work pertinent to each category of the work bid, unless qualified otherwise in writing in the bid. The bid documents and addendums will be issued to the bidders via a ShareFile site managed by the Architect. A ShareFile link will be issued to each bidder that will be accessible for 30 days, after 30 days the link will expire. This information may be shared with sub-contractors as well. After the before mentioned expiration it will be the Owner and Contractor to save their network systems for their use. Repeated issuance of new ShareFile links by the Architect may be charged as additional services as the Architect's discretion. Owner may elect to disqualify a bid due to failure to submit a bid in the form requested, failure to bid requested alternatives or unit prices, failure to complete entries in all blanks in the Bid Form, or inclusion by the Bidder of any alternates, conditions, limitations or provisions not called for. The Owner reserves the right to reject a bid based on Owner's and Architect's evaluation of qualification information submitted following opening of bids. Owner's evaluation of the Bidder's qualifications will include: status of licensure and record of compliance with licensing requirements, record of quality of completed work, record of Project completion and ability to complete, record of financial management including financial resources available to complete Project and record of timely payment of obligations, record of Project site management including compliance with requirements of authorities having jurisdiction, record of number of current claims and disputes and the status of their resolution, and qualifications of the Bidder's proposed Project staff and proposed subcontractors. The bidder shall provide a list of major subcontractors, suppliers, and manufacturers furnishing or installing products no later than two business days if the Owner or Architect request such list. Include the subcontractors, suppliers, and manufacturers providing work totaling three percent or more of the bid amount. Do not change subcontractors, suppliers, and manufacturers from those submitted without approval of Architect and Owner. Bids shall be submitted in the format and time frame as required by the Owner. The bidder shall identify all addendums included in their bid on the bid form. The owner reserves the right to throw out any bids that excluded any addendums issued in compliance with the requirements outlined in these contract documents. 00300 - GEOTECHNICAL REPORT Bidders are required to examine the Geotech report (copies of which are available at the office of the Owner and Geotechnical Engineer) and make their own investigation of the site before bidding. The report is provided only for the information and the convenience of bidders. Owner and Architect disclaim any responsibility for the information contained therein. 00700 - GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION AIA Document A201 - 2007 Edition of General Condition of the Contract for Construction and the Supplemental Conditions below, shall be the governing document in regards to Owner, Contractor, Architect roles during construction and shall be the basis of the contract. These documents, taken together, shall be the contract. These requirements are the minimum recommendations of the Architect, any agreements for construction in place between the Owner and Contractor are independent to these General Conditions and if conflicts occur between these General Conditions and the independent contract for construction between the Owner and Contractor the contract for construction shall supersede. 00800 - SUPPLEMENTAL CONDITIONS The following supplements modify the General Conditions of the Contract for Construction, "AIA Document A201, 2007 Edition. Where a portion of the General Conditions is modified or deleted by these Supplemental General Conditions, the unaltered portions of the General Conditions shall remain in effect. ARTICLE 1: GENERAL PROVISIONS a. ~~Delete~~ Clause 1.1.1 and replace with the following: The Contract Documents. These construction documents shall be made a part of the contract for construction between the owner and contractor. All requirements within these General Conditions shall be considered minimum requirements for construction all more specific requirements with the contract between owner and contractor shall supersede these requirements. b. ~~Delete~~ Clause 1.1.2 and replace with the following: The Contract. The Contract when referenced in these general conditions shall reference these construction documents and any and all other contract documents prepared and agreed to by the owner and contractor. The contract shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or, (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the contract and within these General Conditions intended to facilitate performance of the Architect's duties. c. Add Paragraph 1.2.4 1.2.4 - If discrepancies appear among contract documents, Contractor shall request interpretation in writing before proceeding with the work. Should conflicts between drawings and specifications exist, Contractor is deemed to have indicated the method of doing work in his bid unless he has asked for and obtained a written decision before submission of his proposal as to which method or materials will be required. c. Add Paragraph 1.2.5 1.2.5 - Before ordering material or doing work, the Contractor shall verify all dimensions and job conditions, and shall take measurements at the job and shall be responsible for the correctness of same. Any discrepancies between the drawings and specifications and existing conditions shall be referred to the Architect for adjustment before any work affected thereby has been performed. ARTICLE 3: CONTRACTOR a. 3.2 Review of Contract Documents and Field Conditions by Contractor 1.) Add Paragraph 3.2.2.1 3.2.2.1 - The Contractor or any Subcontractor, before commencing work on any surface which receives or is the base of other materials, shall thoroughly inspect and report to the Architect any defects which will affect the application, finish or fastening of such materials to the surface. Commencement of work on such surface will constitute the Contractor's acceptance of the surface. b. 3.3 Supervision and Construction Procedures 1.) Add Paragraph 3.3.4 3.3.4 - The Contractor shall construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations, pits, trenches and floors free of water. The Contractor shall at all times provide protection against rain, wind, storms, frost, and heat, so as to maintain all work and materials free from damage. At the end of each day's work, all new work likely to be damaged shall be protected properly. If low temperatures make it impossible to continue operations safely in spite of cold weather preparations, the Contractor shall cease work and shall notify the Architect immediately. 2.) Add Paragraph 3.3.5 3.3.5 - All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned, in accordance with manufacturer's printed directions (latest edition) unless specified to the contrary. Where reference is made to manufacturer's directions, Contractor shall have, on file at the job site office, a copy of each direction. c. 3.4 Labor and Materials 1.) Add the following Subparagraphs 3.4.4 and 3.4.5: 3.4.4 - After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in these General Conditions and Division 01635 of the Specifications. 3.4.5 - By making requests for substitutions based on Subparagraph 3.4.4 above, the Contractor:	
1. represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified; 2. represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified; 3. certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and 4. will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.	
d. 3.5 Warranty 1.) Add Paragraph 3.5.2 3.5.2 - All special warranties required by the Contract Documents shall be secured by the Contractor who shall submit 2 copies of each to the Architect before final Application for Payment. Architect will forward one copy of each to Owner. For warranty period and other requirements, see Article 12. 2.) Add Paragraph 3.5.3 3.5.3 - If, within one year after the Date of Substantial Completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any of the work is found by the Owner to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so. The Owner shall give such notice promptly after discovery of the condition. e. 3.7 Permits, Fees, and Notices: 1.) Add to Paragraph 3.7.1 the following: Permits, fees, and licenses necessary for the execution of the mechanical and electrical work shall be secured and paid for by the Subcontractors involved. f. 3.9 Superintendent 1.) Add the following subparagraph 3.9.4 3.9.4 Each major Subcontractor shall be under the constant supervision of a qualified superintendent or foreman. The above requirements regarding superintendent shall apply to the superintendent for each Subcontractor as well as the superintendent for the general contract work. Superintendents may not be changed without written approval of Architect. Provide list of Superintendent, principal of firm, and phone no. of each when requested by Architect. g. 3.12 Shop Drawings, Product Data and Samples 1.) Add paragraphs 3.12.5.1, 3.12.5.2, and 3.12.5.3 3.12.5.1 - The Architect will not accept for review any submittal which has not been approved by the General Contractor and submitted according to Section 3.12 of the General Conditions and Section 01330 Submittals of Specifications. 3.12.5.2 - Section 01330 Submittals establishes method and procedure for all submissions required by the Contract Documents. 3.12.5.3 - Color samples for all materials requiring color selection shall be submitted within 30 days after signing of contract for general construction. h. 3.15 Cleaning Up: 1.) Add Paragraph 3.15.1.1 and 3.15.1.2 3.15.1.1 - Contractor shall clean all glass; replace all broken glass; remove paint stains, spots, marks and dirt from finished surfaces; clean all hardware; clean all fixtures; clean and vacuum carpets; wash and polish all other floor surfaces. Contractor shall also comply with all special cleaning instructions contained in the specifications. Contractor shall keep interior of building free of stored or unneeded combustible materials. 3.15.1.2 - Areas of the building that are to be occupied by the Owner prior to completion of the entire project shall be given a final cleaning by the Contractor prior to such occupancy.	
ARTICLE 7: CHANGES IN THE WORK a. 7.2 Change Orders 1.) ~~Revise~~ paragraphs 7.2.1 to the following: 7.2.1 - A Change Order is a written instrument prepared by the Contractor and signed by the Owner, Architect, and Contractor stating their agreement upon the following: 1. The change in the Work; 2. The amount of the adjustment, if any, in the Contract Sum; and 3. The extend of the adjustment, if any, in the Contract Time. b. 7.3 Termination or Suspension of the Contract 1.) ~~Delete~~ Paragraph 7.3.1 and substitute the following: 7.3.1 - The term "day" as used in the Contract Documents shall mean working day, excluding weekends and legal holidays. c. 7.4 Progress and Completion 2.) Add Paragraph 7.4.2 7.4.2 - Work shall be prosecuted regularly, diligently, and uninterrupted at such rate of progress as will insure full completion thereof within the time specified. By executing the contract, the Contractor expressly understands and agrees that the time for the completion of the work described therein is a reasonable time for the completion of same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality. ARTICLE 8: PAYMENTS AND COMPLETION a. 8.2 Schedule of Values 1.) Add the following sentence to 8.2.1 The Schedule of Values shall be prepared in such manner that each item of work and each subcontracted item of work is shown on a single line of AIA Document G703, Application and Certificate for Payment, Continuation Sheet. b. 8.3 Applications for Payment 1.) Add the following sentence to Paragraph 8.3.1: An appropriate Waiver of Lien Certification, executed by the Contractor and each Supplier and Subcontractor, covering all labor and materials in full for the previous month shall be submitted to the Architect together with each Application for Payment for forwarding to the Owner. 2.) Add Paragraph 8.3.1.3 8.3.1.3 Until Substantial Completion, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments. ARTICLE 11: INSURANCE AND BONDS 1.) Add Paragraph 11.1.1.9 11.1.1.9 - Contractor's liability insurance shall include all major divisions of coverage and shall be on a comprehensive basis including: 1. premises - Operation 2. Explosion, Collapse and Underground 3. Products/Completed Operations - to be maintained for 5 years after final payment and acceptance by Owner. 4. Contractual, including indemnification provisions under Paragraph 3.18 (Broad Form). 5. Broad Form coverage for property damage including completed operations. 6. Personal Injury Liability - Normal 7. Umbrella Liability 2.) Add Paragraph 11.1.2.1 11.1.2.1 - The Architect makes the following minimum recommendations for Limits of Liability amounts as follows: Workmen's Compensation Contractor's Liability (11.1.1.9.1, 11.1.9.2, 11.1.1.9.3, 11.1.1.9.4, 11.1.1.9.5, and 11.1.1.9.6, 11.1.1.9.7) Bodily Injury and Property Damage Aggregate Limit \$2,000,000 Bodily Injury and Property Damage Occurrence Limit \$1,000,000 Property Damage Liability Insurance shall include coverage for the following hazards: explosion, collapse, underground Personal Injury Annual Aggregate: \$1,000,000 Commercial Automotive Liability: Bodily Injury and Property Damage \$1,000,000 Umbrella Liability Limit \$5,000,000 As stated these are the Architect's recommended minimum liability insurance coverage amounts. Any other insurance requirements outlined in the contractual agreement between the Owner and Contractor shall supersede these.	
3.) Add paragraph 11.1.2.2 11.1.2.2 - The Owner reserves the right of approval of the insurance company or companies by whom any of the foregoing insurance protection is to be written, and Contractor agrees to provide such insurance only through such insurance company or companies as meets the approval of the Owner. 4.) Add Paragraph 11.1.2.3 11.1.2.3 - In the event of the happening of anything, liability for which is herein assumed, the Contractor agrees to forthwith notify the Owner in writing of such happening, which notice shall set out in detail of such happenings, the cause as far as can be ascertained, the estimate of loss or damage done, the names of witnesses, if any, and the amount of any claim. 5.) Add paragraph 11.1.2.4 11.1.2.4 - The Contractor shall require all subcontractors to comply with the same laws and to furnish, pay for, and maintain the same types, terms, and amounts of insurance as required of the Contractor by this Division. 6.) Add Paragraph 11.1.2.5 11.1.2.5 - The Owner or any affiliates shall be named as a primary additional insured on the Contractor's Liability and umbrella policies and the policies should contain a waiver of subrogation provision in the Owner's favor. 7.) Add Paragraph 11.1.5: 11.1.5 - The Contractor shall furnish one copy each of Certificates of Insurance herein required for each copy of the Agreement which shall specifically set forth evidence of all coverage required by Subparagraphs 11.1.1, 11.1.2 and 11.1.3. The form of Certificates shall be AIA Document G705, Certificate of Insurance. The Contractor shall furnish to Owner copies of any endorsements that are subsequently issued amending coverage or limits. ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT a. 14.1 TERMINATION BY THE CONTRACTOR 1.) Add Paragraph 14.1.5: 14.1.5 - The agreed upon contract between Owner and Contractor shall supersede any and all justifications for termination of the contract by the Contractor if conflicts occur between these General Conditions and the independent contract for construction between the Owner and Contractor. ARTICLE 15: TERMINATION OR SUSPENSION OF THE CONTRACT a. 15.1.2 Notice of Claims: 1.) ~~Revise~~ paragraph 15.1.2.2 to as follows: 15.1.2 - Claims by the Contractor must be initiated by written notice to the other party and the initial decision maker if applicable within 21 days after occurrence of the event giving rise to such claim. The owner must provide written notice with 21 days after recognition of the condition giving rise to the Claim. 2.) ~~Delete~~ paragraphs 15.1.6, 15.1.6.1, and 15.1.6.2 and replace with the following: 00911 ADDENDUM Addendum will be issued using the Architect's typical addendum form and will issued via a ShareFile link as described in the instructions to bidders. No addendums will be issued within 48 hours of the bid time and date unless the bid date is extended as part of the addendum. 01100 SUMMARY The following is the basic project information: Project Identification: Office Building at Sunset Ridge development Project Location: St. Louis County, Missouri 63131 Owner: Paradigm Financial Advisors, LLC 12231 Manchester Road Des Peres, MO 63131 Architect: TRi Architects 6812 Manchester Road Saint Louis, MO 63119 Contact: Dave Yancik E-mail: dave.yancik@triarchitects.com Phone: 314-365-9750 The Work of Project is defined by the Contract Documents and consists of the following: The project shall include "core and shell" construction for an office building totaling 14,170 square feet. Tenant finish plans to be completed at a later date, verify timeframe with Owner. 01230 SCHEDULE OF ALTERNATES See exterior material legend on sheet A201. 01310 - PROJECT COORDINATION Coordinate construction activities included under various sections of these specifications to assume efficient and orderly installation of each part of the work. Where installation of one part of the work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results. Make adequate provisions to accommodate items scheduled for later installation. Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form acceptable to the Architect. The Architect and/or the Architect's consultant will respond to the RFI with the photographs. If there are substantial items that are not identified in the report submitted to the Architect and the Architect completes his substantial condition walk-thru and determines the building is not substantially complete the contractor will be responsible for compensating the Architect for his time and expenses for a return visit. 01320 CONSTRUCTION PROGRESS DOCUMENTATION The contractor shall provide a construction schedule for review and a schedule of values to the Owner and Architect within 5 business days of being released on construction. The contractor shall provide weekly progress reports with weekly construction progress schedules and progress photos to the Owner and Architect. Schedule conflicts and or delays shall be brought to the attention to the Owner in the weekly reports. An updated overall construction schedules shall be issued at least on a monthly basis with a weekly progress report. All changes to the schedule from the previous schedule shall be identified in a report and justification for the change shall be provided. Final detailed photographic documentation shall be submitted to the Architect of both the interior and exterior at which time the contractor is requesting a substantial completion inspection. The contractor shall provide a report identifying the minor items that need to be completed with the photographs. If there are substantial items that are not identified in the report submitted to the Architect and the Architect completes his substantial completion walk-thru and determines the building is not substantially complete the contractor will be responsible for compensating the Architect for his time and expenses for a return visit. 01330 - SUBMITTALS Each subcontractor shall submit shop drawing samples and/or product data for each major product/component to be installed under the respective category of work. Shop drawings/submittals shall be submitted in digital PDF format and shall be returned in PDF format, reviewed in accordance with the General Conditions, indicating action taken. Processing: Allow one (1) week review for initial review. Allow more time if processing must be delayed for coordination with other submittals. The Architect will advise the Contractor when a submittal must be delayed for coordination. Allow one (1) week for reprocessing each submittal. If more than two reviews are necessary for a single submittal the time for the subsequent reviews shall be additional services and this cost may be passed onto the Contractor. Work installed without proper submittal processing and noncomplying work may be rejected by the Architect, resulting in removal and replacement at sole cost to the Contractor. 01400 - QUALITY CONTROL Contractor Responsibilities: The Contractor is responsible for performing all cross-reference the various disciplines' plans herein and reviewed shop drawings prior to starting construction/phase of construction and shall report any discrepancies to the Architect immediately. Only contract documents approved for construction and reviewed shop drawings shall be used for construction. General Contractor shall be responsible for distribution of said documents and updates to the field for construction. It shall be the responsibility of the General Contractor to coordinate the subcontractor work with these project documents. Reference civil drawings for site work, including the building location on the site. No products containing asbestos shall be installed in, or used during the construction of this project. It shall be the responsibility of the General Contractor to certify to the Owner that this requirement has been complied with. Dimensions are to the finish or center of objects. DO NOT scale drawings. The word "align" as used in these documents shall supersede dimensional information. Code Compliance - The Work shall be governed by all applicable local, city, state and national laws and codes. These authorities include, but are not limited to, the National Electric Code, the American Concrete Institute, National Fire Protection Association, or any other authority of body having jurisdiction over Work. The building and parking lot shall comply with the ADA regulation (Accessibility for Handicapped).	
01500 - TEMPORARY FACILITIES All temporary facilities shall comply with applicable laws and regulations set forth by the Governing Agency. 01635 - PRODUCT SUBSTITUTIONS No product substitutions are permitted without the express written permission of the Architect. 01770 CLOSEOUT PROCEDURES Contractor shall prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and when the work is incomplete. The Architect and Owner shall review and, if needed add to this list prior to occupying the building. If earlier occupancy is required then the Architect, Owner, and Contractor shall agree to punch list procedures prior to occupancy. The contractor shall have 15 business days to address and correct all punch list items. The owner reserves the right to withhold up to 10% retention as long punch list items remain outstanding. After the project is substantially complete, the Contractor shall submit to the owner all required warranties and operation / maintenance manuals. One set of final record documents and a copy of all shop drawings and submittals shall also be provided to the Owner by the Contractor. The contractor shall submit HVAC balancing reports to the owner. SECTION 02751 - CEMENT CONCRETE PAVEMENT This specification section is only for items shown and detailed on Architectural plans. All other site concrete pavement shall be installed per specifications on the Civil drawings. PART 1 - GENERAL 1.1 SUMMARY A. Section Includes exterior cement concrete pavement for the following: 1. Loading pads 2. Trash enclosure pads 3. Curb and gutters adjacent to building 4. Walkways 1.2 SUBMITTALS A. Product Data: For each type of product indicated. B. Design Mixtures: For each concrete pavement mixture. 1.3 QUALITY ASSURANCE A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment. B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents. PART 2 - PRODUCTS 2.1 STEEL REINFORCEMENT A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets. B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed. C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacturer bar supports according to CRSi's "Manual of Standard Practice." 2.2 CONCRETE MATERIALS A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project: a. Portland Cement: ASTM C 150, Type I, gray b. Normal-Weight Aggregates: ASTM C 33, Class 4M coarse aggregate, uniformly graded. Provide aggregates from a single source. c. Water: ASTM C 94/C 94M d. Air-Entraining Admixture: ASTM C 260 e. Chemical Admixtures: ASTM C 494/C 494M, of type suitable for application, certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material. 2.3 CURING MATERIALS A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete. B. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating. 2.4 RELATED MATERIALS A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber 2.5 WHEEL STOPS A. Wheel Stops: Precast, air-entrained concrete 1. Dowels: Galvanized steel, 3/4-inch (19-mm) diameter, 10-inch (254-mm) minimum length. 2.6 CONCRETE MIXTURES A. Prepare design mixtures, proportioned according to ACI 301, with the following properties: 1. Compressive Strength (28 Days): 4000 psi (27.6 MPa) 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45 3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm). 4. Air Content: 6 percent plus or minus 1.5 percent. PART 3 - EXECUTION 3.1 EXAMINATION A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. 3.2 EDGE FORMS AND SCREED CONSTRUCTION A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement. B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage. 3.3 STEEL REINFORCEMENT A. General: Comply with CRSi's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement. 3.4 JOINTS A. General: Form construction, isolation, and contraction joints and tool edges true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated. B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour until pavement terminates at isolation joints. C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated. D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness to match jointing of existing adjacent concrete pavement. E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch (6 mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces. 3.5 CONCRETE PLACEMENT A. Moisture subbase to provide a uniform dampened condition at time concrete is placed. B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete. C. Deposit and spread concrete in uniform layers and finish to required surface joints. Do not push or drag concrete into place or use vibrators to move concrete into place. D. Screed pavement surfaces with a straightedge and strike off. E. Commence initial floating using bull float and darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments. 3.6 FLOAT FINISHING A. General: Do not add water to concrete surfaces during finishing operations. B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture. 1. Medium Textured Broom Finish: Draw a soft broile brine broom across float-finished concrete surface perpendicular to line of travel to provide a uniform, fine-line texture. 3.7 CONCRETE PROTECTION AND CURING A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. B. Comply with ACI 306.1 for cold-weather protection. C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x 1 (1 kg/sq. m.) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing. D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface. E. Curing Methods: Cure concrete by moisture-retaining-cover curing, curing compound, or a combination of these methods. 3.8 PAVEMENT TOLERANCES A. Comply with tolerances of ACI 117 and as follows: 1. Elevation: 1/4 inch (6 mm) 2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm) 3. Surface: Gap below 10-foot- (3-m-) long, unlevelled straightedge not to exceed 1/4 inch (6 mm) 4. Joint Spacing: 3 inches (75 mm) 5. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus. 6. Joint Width: Plus 1/8 inch (3 mm), no minus. 3.9 WHEEL STOPS A. Securely attach wheel stops to pavement with not less than two galvanized steel dowels, embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each wheel stop to the pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop. 3.10 REPAIRS AND PROTECTION A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section. B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before scheduled for Substantial Completion inspections. END OF SECTION 02751	
SECTION 03300 - CAST-IN-PLACE CONCRETE WITH AND WITHOUT MVRA (SEE STRUCT. DWGS. FOR ADDITIONAL INFORMATION.) PART 1 - GENERAL 1.1 SUMMARY A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes. 1. All interior slabs to receive glow down lighting shall have a High Performance Concrete Moisture Vapor Reducing Admixture (MVRA) for all new concrete slabs, including slab-on grade, elevated slabs, roof decks, stair treads and landings. 1.2 ACTION SUBMITTALS A. Product Data: For each type of product indicated. B. Design Mixtures: For each concrete mixture. C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. 1.3 INFORMATIONAL SUBMITTALS A. Welding certificates. B. Material certificates. C. Material test reports. D. Sample life of the concrete warranty for MVRA E. Sample adhesion guarantee for MVRA F. Sample moisture letter for MVRA G. Floor surface flatness and levelness measurements. 1.4 QUALITY ASSURANCE A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment. B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated. 1. Personnel conducting field sampling on behalf of the MVRA manufacturer shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program. C. Welding Qualifications: Quality procedures and personnel according to AWS D1.4/D 1.4M. D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents: 1. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials." 2. ACI 208R-06, "Guide for moisture sensitive coatings or material, comply with the following unless modified by requirements in the Contract Documents." a. ACI 208R-06, "Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring." E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures. 1. Slab Moisture Testing and Evaluation: Personnel performing laboratory tests shall be certified in the conduct of ASTM D5084 under the supervision of a licensed geotechnical engineer. The design without tests as to whether the concrete slab is prepared to receive flooring coatings, roofing, etc. rests with the MVRA manufacturer. F. Preinstallation Conference: Conduct conference at Project site. 1. Verify all are familiar with MVRA project specific quality control procedures, review concrete mix designs and examine procedures for ensuring quality of concrete. Each entity directly concerned with MVRA dosed concrete must attend in person, conference call, or provide electronic review of documents, mix designs and procedures. 1.4 WARRANTY A. Moisture Vapor Reduction Admixture (MVRA): 1. MVRA must be installed according to, and in compliance with, the manufacturer's published data sheet to include, but not limited to: a. Dosing instructions. b. On-site representation and sampling requirements. c. Use of an ASTM E 1745 vapor retarder installed following ASTM E 1643 and ASTM F710 guidelines; elevated slabs to receive flooring do not require a vapor retarder. d. The design and specifications for roof deck assemblies, to include but not limited to the use of air barriers and/or vapor retarders is the sole responsibility of the design professional and is excluded from this warranty as are any costs incurred due to roofing overruns. 2. Manufacturer's Warranty: To include: a. Term: Life of the concrete. b. Repair and/or removal of failed flooring or roofing. c. Placement of a topical moisture remediation system. d. Replacement of flooring/roofing materials like original installed to include material and labor. 3. Adhesion Warranty: MVRA Manufacturer shall provide an adhesion warranty to match the term of the adhesive and/or primer manufacturer's material defect warranty upon MVRA manufacturer's acceptance of field bond test. PART 2 - PRODUCTS 2.1 FORM-FACING MATERIALS A. Smooth-Finished Formwork: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints. B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit. 2.2 STEEL REINFORCEMENT A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed. B. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class I zinc coated after fabrication and bending. C. Galvanized-Steel-Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from galvanized-steel wire into flat sheets. D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacturer bar supports from steel wire, plastic, or precast concrete according to CRSi's "Manual of Standard Practice." 2.3 CONCRETE MATERIALS A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project: 1. Portland Cement: ASTM C 150, Type I B. Normal-Weight Aggregates: ASTM C 33, graded. 1. Maximum Coarse-Aggregate Size: 1 inch (25 mm) nominal. C. Water: Replaced by Barrier One Moisture Vapor Reducing Admixture for floor slab 2.4 ADMIXTURES A. Air-Entraining Admixture: ASTM C 260. B. Moisture Vapor Reduction Admixture (In interior floors to receive glow down flooring): "Barrier One High Performance Moisture Vapor Reduction Admixture" manufactured by Barrier One, Inc., 5222 S. Fairview Blvd., #303, Apartment 32703, Contact: Manufacturer's representative, P: 877.224.5850, F: 866.594.3490 or Email at: info@barriersonne.com C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and will not contribute water-soluble ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride. 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A. 2. Retarding Admixture: ASTM C 494/C 494M, Type D. 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D. 4. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II. 2.5 VAPOR RETARDERS A. Sheet Vapor Retarder: ASTM E 1745, Class C not less than 10 mils (0.25 mm) thick. Include manufacturer's recommended adhesive or pressure-sensitive tape. 2.6 CURING MATERIALS (Not Used on Concrete with MVRA) A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete. B. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type I, Class B, dissipating. 2.7 RELATED MATERIALS A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber. 2.8 CONCRETE MIXTURES A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301. B. Admixtures: Use admixtures according to manufacturer's written instructions. 1. Use water-reducing or plasticizing admixture in concrete, as required, for placement and workability. 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions. 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50. C. Proportion normal-weight concrete mixtures as follows: 1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days. 2. Maximum Water-Cementitious Materials Ratio: 0.45 3. Slump Limit: 4 inches (100 mm) plus or minus 1 inch (25 mm). 4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch (38-mm) nominal maximum aggregate size. 2.9 FABRICATING REINFORCEMENT A. Fabricate steel reinforcement according to CRSi's "Manual of Standard Practice." 2.10 CONCRETE MIXING A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information. 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes. PART 3 - EXECUTION 3.1 FORMWORK A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete can support such loads. B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117. C. Chasten exterior corners and edges of permanently exposed concrete. 3.2 EMBEDDED ITEMS A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded. 3.3 VAPOR RETARDERS A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions. 1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape. 2. Flash vapor retarder up perimeter walls to top of floor slab, seal to foundation wall as recommended by the manufacturer. 3. Flash vapor retarder up around all electrical conduit, sanitary piping, and other penetrations to top of floor slab and seal with manufacturer's recommended tape. All groupings of piping may be flashed as one continuous bond flashing as long as the distance between individual pipes does not exceed 1-inch. 4. Repair vapor retarder damaged during placement of reinforcing, or concrete with vapor barrier material or as instructed by manufacturer. Lay beyond damaged area a minimum of 6-inches and seal as prescribed for sheet joints.	

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SPECIFICATIONS

3.5 JOINTS A. General: Construct joints true to line with faces perpendicular to surface plane of concrete. B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect. C. Contraction Joints: Form weakened plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows: - Grooved Joints: Form contraction joints after initial finishing by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces. - Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch (3.2-mm) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction crack. - Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-strip fillets at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.	3.6 CONCRETE PLACEMENT A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation: - Consolidate placed concrete with mechanical vibrating equipment according to ACI 301. - Hot-Weather Placement: Comply with ACI 301. - Cold-Weather Placement: Comply with ACI 306.1. E. Add MVRA from in accordance with manufacturer's printed data sheet instructions: For mix designs ranging from 0.42 to 0.52 w/cm, dose at 14 pounds per 100 pounds (4444/44kg) of total cementitious materials. Remove from the mix. Add separately from the mix. Add separately from other admixtures at the tail end of the mix. Mix designs below 0.42 and above 0.52 may require adjustment and consultation with MVRA manufacturer is required prior to their use. F. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete with MVRA according to ASTM C 94/C 94M, furnish batch ticket information showing dosage of MVRA. G. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Add the MVRA to where it makes direct contact with the ready mix and then rotate drum of batch truck on high for at least seven minutes prior to discharge.	3.7 FINISHING FORMED SURFACES A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits or form projections not exposed to public view. B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities. C. Rubbed Finish: Apply the following to smooth-form finished as-cast concrete where indicated: - Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive unit producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process. - Related Uniformed Surfaces: At tops of walls, horizontal offsets, and similar uniform surfaces adjacent to formed surfaces, strike off smooth and finish with texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent uniformed surfaces unless otherwise indicated. 3.8 FINISHING FLOORS AND SLABS A. General: Comply with ACI 302.1R recommendations for screeding, straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces or by hand floating if area is small and inaccessible to power driven floats. Restraintings, cut down high spots, and fill low spots. Repeat float passes and restrengthening until surface is free of surface irregularities, smooth, granular texture. C. Apply float finish to surfaces to receive trowel finish. D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and finish with texture matching adjacent formed surfaces. Uniform texture and appearance. Grind smooth any surface defects that would be highlighted through applied coatings or floor coverings. E. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile over a cleavage membrane, panel, or another thin-film finish coating system. F. Finish and measure surface to spot at any point between concrete surface and an unviewed, freestanding, 10-ft. (3.05-m) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch (3.2 mm).	3.9 CONCRETE PROTECTING AND CURING A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing. B. Evaporation Retarder: Apply evaporation retarder to unforned concrete surfaces for hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. (x 1 kg/sq. m) x before and during finishing operations. Apply according to manufacturer's instructions after placing, screeding, and bull floating or drying concrete, but before float finishing. C. Cure concrete according to ACI 308.1, by one or a combination of the following methods: - Curing Compound: Apply uniformly in continuous spray or roller application, or according to manufacturer's written instructions. Recast areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period. 3.10 CONCRETE SURFACE REPAIRS A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired or patched to Architect's approval. 3.11 FIELD QUALITY CONTROL A. Testing and Inspection: Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. - The manufacturer of the moisture vapor reduction admixture will, at their expense, engage qualified agencies to obtain project specific sample cylinders and independent certified laboratories for subsequent testing per ASTM D 6824 and provide test reports. - Testing of Slabs Containing MVRA: The moisture vapor reduction admixture (MVRA) manufacturer will perform all moisture testing in accordance with this specification and will issue performance warranties and adhesion guarantees prior to installation of any slab finishes; no further field slab moisture test per testing shall be required. Talk to provide a product that meets or exceeds these requirements will result in all subsequent testing and slab remediation costs being borne by the contractor. A representative or agent of the moisture vapor reduction admixture (MVRA) manufacturer must be present at the time of testing of all MVRA treated concrete. - Do not proceed without this representative being present. - A minimum of one business day notification is required. Field testing technician shall, at the expense of the MVRA Manufacturer, procure at least one 4 inch (102 mm) cylinder from every day of placement of MVRA dosed concrete for the purpose of subsequent hydraulic conductivity/permeability testing. All cylinders shall be independently lab tested in accordance with ASTM D 5084 at the expense of the MVRA manufacturer. Test results must conform to specified limits: - Should any cylinder from any day of placement deliver results in excess of 6.0 E-08 cm/sec, the concrete moisture vapor reduction admixture manufacturer shall procure, at their expense, a core (or cores) from that day of placement. This core (or cores) shall be sent to an independent laboratory for hydraulic conductivity (coefficient or permeability) per ASTM D 5084. - Should any core deliver results in excess of 6.0 E-08 cm/sec per ASTM D 5084, the concrete moisture vapor reduction admixture manufacturer shall provide, at their expense, partial moisture migration system for all areas not meeting the stated limit. 6. Proceeding with placement of concrete dosed with the MVRA without the required representation result in the contractor bearing the cost to core and ship appropriate material for testing per ASTM D 5084.	3.12 MORTAR A. Comply with requirements in Division 4 Section "Unit Masonry Assemblies" for mortar materials and mixes. - For setting mortar, use Type S. - Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required.
3.13 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.14 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.15 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.16 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.17 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.
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3.38 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.39 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.40 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.41 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.42 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.
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3.48 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.49 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.50 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.51 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.	3.52 ACCESSORIES A. Anchors and Dowels: Type 304 stainless steel. B. Proprietary Adhesive Cleaner: Manufacturer's standard-strength, general-purpose cleaner complying with requirements in Division 4 Section "Unit Masonry Assemblies" and approved for intended use by cast stone manufacturer and approved by finish manufacturer for use on cast stone and adjacent masonry materials.

Paradigm Office Building	
12818 DAYLIGHT CIRCLE ST. LOUIS COUNTY, MISSOURI	
TRi Architects Architects of the Possible	
CLIENT	Paradigm Financial Advisors, LLC
ARCHITECT	TRi Architects
STRUCTURAL ENGINEER	Aedifica Case Engineering
CIVIL ENGINEER	Stock & Associates
MECHANICAL ENGINEER	DESIGN/BUILD
PLUMBING ENGINEER	DESIGN/BUILD
ELECTRICAL ENGINEER	DESIGN/BUILD
DATE: 06-25-18	
REVISIONS	
DWG BY cmb	
TRi PROJECT NO. 18-009	
SHEET NO. A003	
SPECIFICATIONS	

SECTION 06100 - ROUGH CARPENTRY	
PART 1 - GENERAL	
1.1 SUMMARY	A. Section includes the following: - Framing with dimension lumber. - Framing with engineered wood products. - Roofing equipment bases and support curbs. - Wood blocking and nailers. - Wood furring and grounds. - Plywood backing panels.
1.2 SUBMITTALS	A. Product Data: For each type of process and factory-fabricated product. Include data for wood-preservative and fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.
PART 2 - PRODUCTS	
2.1 WOOD PRODUCTS, GENERAL	A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated. - Factory mark each piece of lumber with grade stamp of grading agency. B. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project. - Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
2.2 WOOD-PRESERVATIVE-TREATED LUMBER	A. Preservative Treatment by Pressure Process: AWPA C2. - Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. - Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review. D. Application: Treat all rough carpentry, unless otherwise indicated.
2.3 DIMENSION LUMBER FRAMING	A. Maximum Moisture Content: Refer to Structural drawings for these requirements. - Non-Load-Bearing Interior Partitions: Construct of No. 2 grade of any species. - Framing Other Than Non-Load-Bearing Interior Partitions: Refer to Structural drawings for these requirements.
2.4 ENGINEERED WOOD PRODUCTS	A. Refer to Structural drawings for these requirements.
2.5 MISCELLANEOUS LUMBER	A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following: - Blocking. - Nailers. - Roofing equipment bases and support curbs. - Furring. - Grounds. B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content of any species. - For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades: - Mixed southern pine, No. 2 grade: SPB. - Eastern softwoods, No. 2 Common grade: NeLMA. - Northern species, No. 2 Common grade: NLGA.
2.6 PLYWOOD BACKING PANELS	A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness.
2.7 FASTENERS	A. General: Provide fasteners of size and type indicated that comply with requirements specified. - Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M. B. Power-Driven Fasteners: NES MER 272. - Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
2.8 METAL FRAMING ANCHORS (IF THERE IS NOT ANY STRUCTURAL LUMBER PLEASE DELETE THIS SECTION)	A. Refer to Structural drawings for these requirements.
2.9 MISCELLANEOUS MATERIALS	A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm), selected from manufacturer's standard widths to suit width of all members indicated.
PART 3 - EXECUTION	
3.1 INSTALLATION	A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction. - Framing Standard: Comply with AIA-P/A's "Details for Conventional Wood Frame Construction," unless otherwise indicated. B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions. - Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions. Do not splice or cut members unless otherwise indicated. - Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber. - Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following: - NES NER-272 for power-driven fasteners. - Table 2304.9-1, "Fastening Schedule," in ICC's International Building Code.
END OF SECTION 06100	

SECTION 07210 - BUILDING INSULATION	
PART 1 - GENERAL	
1.1 SUMMARY	A. This Section includes the following: - Perimeter wall insulation (supporting backfill). - Concealed building insulation. - Exposed building insulation. - Sound attenuation insulation.
1.2 PERFORMANCE REQUIREMENTS	A. Plenum Rating: Provide glass-fiber insulation where indicated in ceiling plenums whose test performance is rated as follows for use in plenums as determined by testing identical products per "Erosion Test" and "Mold Growth and Humidity Test" described in UL 181, or on comparable tests from another standard acceptable to authorities having jurisdiction. - Erosion Test Results: Insulation shows no visible evidence of cracking, flaking, peeling or delamination of interior surface of duct assembly, after testing for 4 hours at 2500-fm (m/s) air velocity. - Mold Growth and Humidity Test Results: Insulation shows no evidence of mold growth, delamination, or other deterioration due to the effects of high humidity, after inoculation with Chaetomium globosum on all surfaces and storing for 60 days at 100 percent relative humidity in the dark.
1.3 SUBMITTALS	A. Product Data: For each type of product indicated. Product test reports.
1.4 QUALITY ASSURANCE	A. Retain ASTM test method below based on product and kind of fire-resistance characteristic specified for each product in Part 2. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84 for surface-burning characteristics, by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
PART 2 - PRODUCTS	
2.1 MANUFACTURERS	A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection: Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2.2 FOAM-PLASTIC BOARD INSULATION	A. Extruded Polystyrene Board Insulation: ASTM C 578, Type VI, 1.80 lb/cu. ft. (29 kg/m ³), with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively. - Available Manufacturers: - DiversiFoam Products. - Dow Chemical Company. - Owens Corning. - Pacifi Building Products Division. B. Fabric-Faced, Extruded Polystyrene Drainage Panels: ASTM C 578, Type VI, with a density of 1.80 lb/cu. ft. (29 kg/m ³), faced with insulation manufacturer's standard nonwoven filtration fabric and fabricated with 1 side having a matrix of drainage and edge channels. - Available Manufacturers: - Owens Corning. - Cleer Corporation.
2.3 GLASS-FIBER BATT/ANNEY INSULATION	A. Available Manufacturers: - CertainTeed Corporation. - Guardian Fiberglass, Inc. - Johns Manville. - Knauf Fiber Glass. - Owens Corning. B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing) consisting of fibers, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, passing ASTM E 136 for combustion characteristics. - Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with a flame-spread index of 25 or less), Category I (membrane is a vapor barrier), faced with foil-scrim-fabric, foil-scrim, or foil-scrim-polyethylene vapor-retarder membrane on 1 face. - Where glass-fiber blanket insulation is indicated by the following characteristics, provide blankets in batt or roll form with thermal resistances indicated: 3-1/2 inches (89 mm) thick with a thermal resistance of 11 deg F x h x sq. ft./Rtu at 75 deg F (1.9 K x sq. m/W at 24 deg C) 5-1/2 inches (140 mm) thick with a thermal resistance of 19 deg F x h x sq. ft./Rtu at 75 deg F (3.3 K x sq. m/W at 24 deg C) 10 inches (254 mm) thick with a thermal resistance of 30 deg F x h x sq. ft./Rtu at 75 deg F (5.2 K x sq. m/W at 24 deg C).

2.4	VAPOR RETARDERS A. Fire-Retardant, Reinforced-Polyethylene Vapor Retarders: 2 outer layers of polyethylene film laminated to an inner reinforcing layer consisting of either nonwoven grid of nylon cord or polyester scrim and weighing not less than 22 lb/1000 sq. ft. (10 kg/100 sq. m), with maximum permeance rating of 0.017 perm (7.56 ngPa x s x m) and with flame-spread and smoke-developed indexes of not more than 5 and 60, respectively. Used in lieu of a faced insulation product in exterior walls. - Available Products: - Saven Industries Inc.; DURAS-KRIM ZFR. - Reel Industries, Inc.; Grifflony 1-55 FR. B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.
2.5	AUXILIARY INSULATING MATERIALS A. Vapor-Retarder Fasteners: Pancake-head, self-tapping steel drill screws, with fender washers.
	B. Adhesive for Bonding Insulation: Product, with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates. C. Eave Ventilation Troughs: Preformed, rigid fiberglass or plastic sheets designed and sized to fit between roof framing members and to provide cross ventilation between insulated attic spaces and vented eaves.
2.6	INSULATION FASTENERS A. Adhesively Attached, Spindle-Type Anchors: Plate formed from perforated galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square, welded to projecting copper-coated steel spindle 0.105 inch (2.67 mm) in diameter and of length capable of holding insulation of thickness indicated securely in position with 1-1/2-inch (38-mm) square or diameter self-locking washers complying with the following requirements:
	1. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch (0.41-mm)-thick galvanized steel sheet, with beveled edge for increased stiffness.
	2. Where anchors are located in ceiling plenums, crawlspaces, or attic spaces, protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.
	B. Insulation Standoff: Splice fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch (25 mm) between face of insulation and substrate to which anchor is attached.
	C. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

PART 3 - EXECUTION	
3.1 INSTALLATION, GENERAL	A. Comply with insulation manufacturer's written instructions applicable to products and application indicated. B. Insulation in place that is undamaged, dry, and unsold and that has not been left exposed at any time to ice, rain, and snow. C. Extend insulation in thickness indicated to envelope entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement. D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping. E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.
3.2 INSTALLATION OF PERIMETER INSULATION	A. On vertical surfaces, set insulation units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer. 1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) below exterior grade line. B. Protect below-grade insulation on vertical surfaces from damage during backfilling by protection course with joints butted. Set in adhesive according to insulation manufacturer's written instructions.
3.3 INSTALLATION OF GENERAL BUILDING INSULATION	A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units. B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shopped into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer. C. Set vapor-retarder-faced units with vapor retarder to warm-in-winter side of construction, unless otherwise indicated. 1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation. D. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows: 1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated. Apply insulation standards to each spindle to create cavity width indicated between concrete substrate and insulation. 2. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness. 3. Where insulation will not be covered by other building materials, apply capped washers to tops of spindles. E. Install board insulation in curtain-wall construction where indicated on Drawings according to curtain-wall manufacturer's written instructions. 1. Retain insulation in place by metal clips and straps or integral pockets within window frames, spaced at intervals recommended in writing by insulation manufacturer to hold insulation securely in place without touching spanning glass. Maintain cavity width of dimension indicated between insulation and glass. 2. Install insulation where it contacts perimeter fire-containment system to prevent insulation from bowing under pressure from perimeter fire-containment system. F. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume equating a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
3.4 INSTALLATION OF INSULATION IN CEILINGS FOR SOUND ATTENUATION	A. Install 3-inch (76-mm) thick, unfaced glass-fiber blanket insulation over suspended ceilings at partitions in a width that extends insulation 48 inches (1219 mm) on either side of partition.
3.5 INSTALLATION OF VAPOR RETARDERS	A. General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation. B. Before installing vapor retarder, apply urethane sealant to flanges of metal framing including runner tracks, metal studs, and framing around door and window openings. Seal overlapping joints in vapor retarders with vapor-retarder tape according to vapor-retarder manufacturer's written instructions. Seal butt joints with vapor-retarder tape. Locate all joints over framing members or other solid substrates. C. Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer. D. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarder. E. Repair tears or punctures in vapor retarder before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder.

END OF SECTION 07210

END OF SECTION 07210	
SECTION 07240 - WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)	
PART 1 - GENERAL	
1.1 SUMMARY	A. Section includes water-drainage exterior insulation and finish system (EIFS) applied over water-resistive coating over sheathing.
1.2 PERFORMANCE REQUIREMENTS	A. Class PB EIFS: Physical properties and structural performance that comply with ICC-ES AC208. Drainage: According to ICC-ES AC24
1.3 SUBMITTALS	A. Product Data: For each type and component of EIFS indicated. - Shop Drawings: For EIFS. Include plans, elevations, sections, details of components, details, penetrations, terminations, joints, fasteners, and attachments to other work. - Samples: For each exposed product and for each color and texture specified.
1.4 QUALITY ASSURANCE	A. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution and set quality standards for fabrication and installation. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
PART 2 - PRODUCTS	
2.1 MANUFACTURERS	A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: - Dryvit Systems, Inc.; "Outsulation Plus" - Parex, Inc.; a brand of Parex/Lanabrix, Inc.; system equal to Dryvit "Outsulation Plus" - Senergy; Degussa Wall Systems, Inc.; system equal to Dryvit "Outsulation Plus" - Sto Corp.; system equal to Dryvit "Outsulation Plus"
2.2 MATERIALS	A. Compatibility: Provide water-resistive coating, adhesive, fasteners, board insulation, reinforcing meshes, base- and finish-coat systems, sealants, and accessories that are compatible with one another and with substrates and approved for use by EIFS manufacturer for Project. - Water-Resistive Coatings: EIFS manufacturer's standard formulation and accessories for use as water/weather-resistive barriers, compatible with substrate, and complying with physical and performance criteria of ICC-ES AC209 - Flexible Membrane Flashing: Cold-applied, fully self-adhering, self-healing, rubberized-asphalt and polyethylene film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer. - Insulation Adhesive: Standard formulation. - Molded, Rigid Cellular Polystyrene Board Insulation: Comply with ASTM C 578, Type I; EIFS manufacturer's requirements; and EIMA's "EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Boards" - Foam Shapes: Provide with profiles and dimensions indicated on Drawings. - Reinforcing Mesh: Balanced, alkali-resistant, open-weave, glass-fiber mesh, complying with ASTM C 578 and the following: - Standard-Impact Reinforcing Mesh: Not less than 4.0 oz./sq. yd. (136 g/sq. m) - Intermediate-Impact Reinforcing Mesh: Not less than 12.0 oz./sq. yd. (407 g/sq. m) - High-Impact Reinforcing Mesh: Not less than 15.0 oz./sq. yd. (509 g/sq. m) - Heavy-Duty Reinforcing Mesh: Not less than 20.0 oz./sq. yd. (678 g/sq. m) - Strip Reinforcing Mesh: Not less than 3.75 oz./sq. yd. (127 g/sq. m) - Detail Reinforcing Mesh: Not less than 4.0 oz./sq. yd. (136 g/sq. m) - Cover Reinforcing Mesh: Not less than 7.2 oz./sq. yd. (244 g/sq. m) - Base-Coat Materials: Standard formulation. - Primer: Factory-mixed, elastomeric-polymer primer. - Finish-Coat Materials: Factory-mixed, standard acrylic-based coating with enhanced mildew resistance. - Colors: Match Architect's samples.

PART 3 - EXECUTION	
3.1 INSTALLATION	A. Comply with EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate indicated. - Water-Resistive Coatings: Apply over substrates to protect substrates from degradation and to provide water-/weather-resistive barrier. - Flexible Membrane Flashing: Install over weather-resistive barrier, applied and lapped to shed water, seal at openings, penetrations, terminations, and where indicated by EIFS manufacturer, written instructions to protect wall assembly from degradation. Prime substrates, if required, and install flashing to comply with EIFS manufacturer's written instructions and details. - Apply trim accessories at locations indicated on Drawings. - Board Insulation: Adhesively attach to substrate. - Expansion Joints: Install at locations indicated, where required by EIFS manufacturer, where expansion joints are indicated in substrates behind EIFS, where EIFS adjoin dissimilar substrates, materials, and construction; and where wall height changes. - Base Coat: Apply to exposed surfaces of insulation and foam shapes in minimum thickness substrates indicated by EIFS manufacturer, but not less than 1/16-inch (1.6-mm) dry-coat thickness. - Reinforcing Mesh: Completely embed mesh in wet base coat, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are not visible. - Standard-impact reinforcing mesh unless otherwise indicated. - Double-Layer Reinforcing Mesh Application: Where indicated, apply second base coat and second layer of standard impact reinforcing mesh. - Double Base-Coat Application: Where indicated, apply second base coat in same manner and thickness as first application except without reinforcing mesh. - Finish Coat: Apply over dry primed, base coat, maintaining a wet edge at all times for uniform appearance, in thickness required by EIFS manufacturer to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations. - Texture: Match Architect's samples.
END OF SECTION 07240	

SECTION 07272 - FLUID-APPLIED MEMBRANE AIR BARRIERS	
PART 1 - GENERAL	
1.1 SUMMARY	A. Section includes fluid-applied, vapor-permeable membrane air barriers.
1.2 ACTION SUBMITTALS	A. Product Data: For each type of product. - Shop Drawings: For air barrier assemblies. - Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
1.4 QUALITY ASSURANCE	A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
PART 2 - PERFORMANCE REQUIREMENTS	
2.1 PERFORMANCE REQUIREMENTS	A. General: Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits. 2.2 VAPOR-PERMEABLE MEMBRANE AIR-BARRIER Generally retain this article for a membrane air barrier located on the cold side of primary wall insulation. A separate vapor retarder may also be required at a different location within the wall. These membranes are materials with an installed dry film thickness of about 40 mils (1.0 mm) and thicker. - Fluid-Applied, Vapor-Permeable Membrane Air Barrier: Elastomeric, modified bituminous membrane. - Products: Subject to compliance with requirements, provide the following: - Elastomeric, Modified Bituminous Membrane: - Holman & Standard, Inc.; Tectfresh Liquid VP. - EIFS Air Barrier will be accepted behind stone. - Physical and Performance Properties: - Air Permeance: Maximum 0.002 cfm/sq. ft. of surface area at 1.57-lb/sq. ft. pressure differential; ASTM E 2178. - Vapor Permeance: Minimum 5.5 perms (320 ngPa x h x sq. m); ASTM E 96E 90M. - Ultimate Elongation: Minimum 200 percent; ASTM D 412, Die C.
2.3 ACCESSORY MATERIALS	A. General: Accessory materials recommended by air-barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air barrier material. - Sprayed Polyurethane Foam Sealant: One- or two-component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0-lb/cu. ft. (24- to 32-kg/cu. m) density; flame-spread index of 25 or less according to ASTM E 162, with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer. - Termination Mastic: Air-barrier manufacturer's standard cold fluid-applied elastomeric fluid; trowel grade.

PART 3 - EXECUTION	
3.1 SURFACE PREPARATION	A. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction. - Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane. - Remove excess mortar from masonry ties, shelf angles, and other obstructions. - At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
3.2 INSTALLATION	A. General: Install fluid-applied membrane air-barrier and accessory materials according to air-barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier. - Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane. - Install air-barrier assembly on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate. B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by fluid air-barrier material on same day. Reprime areas exposed for more than 24 hours. - Prime glass-fiber surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats. C. Connect and seal exterior wall air-barrier material continuously to roofing membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glass curtain wall systems, storefront windows, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials. - At end of each working day, seal top edge of air barrier to substrate with termination mastic. - Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transitions and flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate. Maintain 3 inches (75 mm) of full contact over firm bearing to weatherstrips frames with not less than 1 inch (25 mm) of full contact. - Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant. - Seal air-barrier assembly around masonry reinforcing or ties and penetrations with termination mastic. - Seal top of through-wall flashings to air barrier. - Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or endings in reglets with termination mastic. - Repair punctures, voids, and deficient patched seams. Silt and flatten fishmouths and blisters. - Extend patches 6 inches (150 mm) beyond repaired areas. - Fluid-Applied Membrane Material: Apply a continuous unbroken air-barrier membrane to substrates according to the following thickness. Apply air-barrier membrane in full contact around protrusions such as masonry ties. - Vapor-Permeable Membrane Air Barrier: Total dry film thickness as recommended in writing by manufacturer to meet performance requirements, but not less than 40-mil (1.0-mm) dry film thickness applied in two equal coats. - Do not cover air barrier until it has been tested and inspected by Owner's testing agency. - Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.
END OF SECTION 07272	

SECTION 07543 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING	
PART 1 - GENERAL	
1.1 SUMMARY	A. Section includes: - Adhered thermoplastic polyolefin (TPO) roofing system. - Roof insulation.
1.2 DEFINITIONS	A. Roofing Termination: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.
1.3 ACTION SUBMITTALS	A. Product Data: For each type of product. - Shop Drawings: For EIFS. Include plans, elevations, sections, details, and attachments to other work. - Samples for Verification: For the following products: - Sheet roofing, of color required. - Walkway pads or rolls, of color required.
1.4 INFORMATIONAL SUBMITTALS	A. Research/Evaluation Reports: For components of roofing system, from ICC-ES. Sample Warranties: For manufacturer's special warranties.
1.5 CLOSEOUT SUBMITTALS	A. Maintenance Data: For roofing system to include in maintenance manuals.
1.6 QUALITY ASSURANCE	A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
1.7 WARRANTY	A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS	
2.1 MANUFACTURERS	A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: - Firestone Building Products - GAF Materials Corporation - Johns Manville - Versco Incorporated B. Sealant Limitations: Obtain components including roof insulation and fasteners for roofing system from same manufacturer as membrane roofing.
2.2 PERFORMANCE REQUIREMENTS	A. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM D 1552, ASTM G 154, or ASTM G 155. - Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3745 or ASTM D 4272. - Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A for application and roof protection indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
2.3 TPO ROOFING	A. Fabric-Reinforced TPO Sheet: ASTM D 6878, internally fabric- or scrim-reinforced, uniform, flexible TPO sheet. - Thickness: 60 mils (1.5 mm), nominal. - Exposed Face Color: As selected by Architect. (See drawings.)

2.4 AUXILIARY ROOFING MATERIALS	A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing system. - Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction. B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils (1.4 mm) thick, minimum, of same color as TPO sheet. - Bonding Adhesive: Manufacturer's standard D. Slip Sheet: Manufacturer's standard, of thickness required for application.
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2.5 ROOF INSULATION	A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat faced on both major surfaces. - Tapered Insulation: Provide factory-lapped insulation boards fabricated to slope of 1/2 inch per 12 inches unless otherwise indicated. - Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
2.6 INSULATION ACCESSORIES	A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.
2.7 WALKWAYS	A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.

PART 3 - EXECUTION	
3.1 ROOFING INSTALLATION, GENERAL	A. Install fully adhered roofing system according to roofing system manufacturer's written instructions. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
3.2 INSULATION INSTALLATION	A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday. - Install tapered insulation under area of roofing to conform to slopes indicated. - Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 8 inches (150 mm) in each direction. - Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. - Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.
3.3 ADHERED ROOFING INSTALLATION	A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll membrane and allow it to relax before rolling. - Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps. - Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to surface area of roofing. - In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing.
3.4 BASE FLASHING INSTALLATION	A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions. - Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing. - Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing. - Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seal installation. - Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.
3.5 WALKWAY INSTALLATION	A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.
3.6 PROTECTING AND CLEANING	A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
END OF SECTION 07543	

SECTION 07620 - SHEET METAL FLASHING AND TRIM	
PART 1 - GENERAL	
1.1 SUMMARY	A. Section includes: Formed roof-drainage sheet metal fabrications.
1.2 DEFINITIONS	A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
1.3 ACTION SUBMITTALS	A. Product Data: For each type of product. - Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work. - Samples for Verification: For the following products: - Sheet roofing, of color required. - Walkway pads or rolls, of color required.
1.4 INFORMATIONAL SUBMITTALS	A. Research/Evaluation Reports: For components of roofing system, from ICC-ES. Sample Warranties: For manufacturer's special warranties.
1.5 CLOSEOUT SUBMITTALS	A. Maintenance Data: For roofing system to include in maintenance manuals.
1.6 QUALITY ASSURANCE	A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
1.7 WARRANTY	A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Warranty Period: 15 years from date of Substantial Completion.

2. Formed low-slope roof sheet metal fabrications.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Distinguish between shop- and field-assembled work.
3. Include identification of finish for each item.
4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.

C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

C. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Employ skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance. Retain subparagraph below if copings or roof edge flashings that are SPRI ES-1 tested are required.

1. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

1.6 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS	
2.1 PERFORMANCE REQUIREMENTS	A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight. - Design Pressure: As indicated on Drawings - Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
2.2 SHEET METALS	A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying stripable, temporary protective film before shipping. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, CS90 (2275) coating designation or aluminum-zinc alloy-coated steel sheet according to ASTM A 950/A 950M, Class A250 (Class A2M150) coating designation, Grade 40 (Grade 475); prepared by coil-coating process to comply with ASTM A 950/A 950M.
2.3 UNDERLAYMENT MATERIALS	A. Self-Adhering, High-Temperature Sheet: Minimum 30 mils (0.76 mm) thick, consisting of a self-resistant polyethylene or polypropylene film top layer with a layer of bitumen or SBS-modified asphalt adhesive, with release paper backing, specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer. - Products: Subject to compliance with requirements, provide one of the following: - Carlisle Residential, a division of Carlisle Construction Materials; WIP 300HT. - Grace Construction Products; a unit of W. R. Grace

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

Retain formed items required in this article. Although the most common fabrications are included, insert descriptions of others if required.

A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long sections. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Fabricate from the Following Materials:

a. Galvanized Steel: 0.028 inch (0.71 mm) thick.

b. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch (0.71 mm) thick.
B. Copings: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long sections. Fabricate joints of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.

1. Fabricate from the Following Materials:

a. Galvanized Steel: 0.040 inch (1.02 mm) thick.

b. Aluminum-Zinc Alloy-Coated Steel: 0.040 inch (1.02 mm) thick.

C. Counterflashing and Flashing Receivers: Fabricate from the following materials:

1. Galvanized Steel: 0.022 inch (0.56 mm) thick.

2. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.

D. Roof-Penetration Flashing: Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch (0.71 mm) thick.

2. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch (0.71 mm) thick.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in single fashion over sub, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Shear side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by permanent separation as recommended by sheet metal manufacturer or cited steel metal standard.

1. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 07920 "Joint Sealants."

3.3 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited steel metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited steel metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited steel metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate.
C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited steel metal standard unless otherwise indicated.
D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.
E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Install counterflashing in grooves or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints minimum of 4 inches (100 mm).
F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with [elastomeric] [butyl] sealant and clamp flashing to pipes that penetrate roof.

3.5 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
B. Clean off excess sealants.
C. Remove temporary protective coverings and stripable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 0720

SECTION 0720 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof curbs.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory indicated.

B. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, coordinating penetrations and roof-mounted items.
B. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.

1. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2 mil (0.005 mm).
2. Stainless-Steel Sheet and Shapes: ASTM A 240/A 240M or ASTM A 666, Type 304.
3. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.

2.2 MISCELLANEOUS MATERIALS

A. General: Provide fasteners, types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.
B. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2, not less than 1-1/2 inches (38 mm) thick.
C. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners.
D. Sealants: As recommended by roof accessory manufacturer for installation indicated.

2.3 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb uncapable of supporting superimposed live and dead loads, including equipment loads and other construction loads indicated on Drawings; welded or mechanically fastened and sealed corner joints, and integrally formed deck-mounting flange at perimeter bottom.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

A. ACS Industries, Inc.
B. Curbs Plus, Inc.
C. Custom Solution Roof and Metal Products.
D. Greenheck Fan Corporation.
E. LULCO Corporation.
F. Metallic Products Corp.
G. Micor Inc., Commercial Products Group of Hart & Cooley, Inc.
H. Pate Companies (The).
I. Roof Products, Inc.
J. Safe Air of Illinois.
K. Thru-Tek Corporation.
L. Vent Products Co., Inc.

B. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch (1.32 mm) thick.

1. Finish: Mill phosphatized.

C. Construction: Retain first subparagraph below if required.

1. Insulation: Factory insulated with 1-1/2-inch- (38-mm-) thick glass-fiber board insulation.
2. Liner: Installed material as curb, of manufacturer's standard thickness and finish.
3. Factory-stamped wood nailer up top of curb, continuous around curb perimeter.
4. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
5. Fabricate curbs to minimum height of 14 inches unless otherwise indicated.
6. Top Surface: Level around perimeter with roof slope accommodated by sloping the deck-mounting flange.
7. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Verify dimensions of roof openings for roof accessories. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene sheet.

C. Seal joints with sealant as required by roof accessory manufacturer.

3.2 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780.
B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 09911 "Exterior Painting" and Section 09912 "Interior Painting."

C. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 0720

SECTION 0720 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.

2. Urethane joint sealants.

3. Acoustical joint sealants.

1.2 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples: For each kind and color of joint sealant required.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.

2. Joint-sealant manufacturer and product name.

3. Joint-sealant formulation.

4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Warranties.

1.4 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Liquid-Applied Joint Sealants: Comply with ASTM A 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
B. Stan-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
C. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

2.2 SILICONE JOINT SEALANTS

A. Mildew-Resistant Silicone Joint Sealant: ASTM C 920.

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following:

a. Tremco Incorporated - Tremco 240.

b. Or approved equal.

2. Type: Single component (S) with fungicide.

3. Grade: nonsag (NS).

4. Uses Related to Exposure: Nontraffic (NT).

2.3 URETHANE JOINT SEALANTS

A. Urethane Joint Sealant: ASTM C 920.

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following:

a. Tremco Incorporated - Dymec 240.

b. Or approved equal.

2. Type: multicomponent (M).

3. Grade: nonsag (NS).

4. Class: 50.

5. Uses Related to Exposure: Traffic (T) or Nontraffic (NT).

2.4 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 934. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 914.

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following:

a. Tremco Incorporated.

b. Or approved equal.

2.5 JOINT SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (acellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
B. Cleaners for Nongroutous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
1. Remove lamination and form-release agents from concrete.
2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond, do not allow spillage or migration onto adjoining surfaces.
C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed.
1. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants applicable to materials, applications, and conditions indicated.
2. Install sealant backings of kind and size indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backings of joints.
D. Install sealants using proven techniques that comply with the following and at the same time backings are installed.

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skimming or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

F. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.

G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.3 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces

1. Joint Locations:

a. Control and expansion joints in brick pavers.

b. Isolation and contraction joints in cast-in-place concrete slabs.

c. Joints between plant-precast architectural concrete paving units.

d. Joints in stone paving units.

e. Joints between different materials listed above.

2. Joint Sealant: Urethane.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surface.

1. Joint Locations:

a. Construction joints in cast-in-place concrete.

b. Joints between plant-precast architectural concrete units.

c. Control and expansion joints in unit masonry.

d. Joints in dimension stone cladding.

e. Joints in glass unit masonry assemblies.

f. Joints in exterior insulation and finish systems.

g. Joints between metal panels.

h. Joints between different materials listed above.

i. Perimeter joints between materials listed above and frames of doors, windows and louvers.

j. Control and expansion joints in ceilings and other overhead surfaces.

k. Other joints as indicated.

2. Joint Sealant: Urethane.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.

b. Control and expansion joints in stone flooring.

c. Control and expansion joints in brick flooring.

d. Control and expansion joints in tile flooring.

e. Other joints as indicated.

2. Joint Sealant: Urethane.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors

D. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces

1. Joint Sealant Location:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.

b. Tile control and expansion joints where indicated.

c. Other joints as indicated.

2. Joint Sealant: Silicone.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors

E. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces

1. Joint Location:

a. Acoustical joints where indicated.

b. Other joints as indicated.

2. Joint Sealant: Acoustical.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range

END OF SECTION 0720

SECTION 0810 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Hollow-metal work.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification: For each type of exposed finish required.

E. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Amnold International LLC.

2. Caco Door Products: an Assa Abloy Group company.

3. Curries Controls: an Assa Abloy Group company.

4. Daxbar.

5. K&S Steel Door & Frame Sys. Inc.

6. Genstar Doors Inc.

7. Karpen Steel Custom Doors & Frames.

8. Mester Door Inc.

9. MPI Group, LLC (The).

10. Stencilcraft: an Ingersoll-Rand company.

11. Stewart Steel: Door Division.

12. Titan Metal Products, Inc.

2.2 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies

F. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.08 cfm/sq. ft. (0.03 L/s per sq. m) of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa).

G. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.

C. Samples: For each type of exposed finish required.

D. Other Action Submittals:

1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams.

E. Delegated-Design Submittal: For aluminum-framed systems indicated to comply with performance requirements and design criteria, including analysis and design signed and sealed by the qualified professional engineer responsible for their preparation.

F. Warranties: Sample of sample warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.

C. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

D. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. DFCO Corporation.

2. Kawneer North America.

3. United States Aluminum.

4. Vistawall Architectural Products.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209 (ASTM B 209M).

2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).

3. Extruded Structural Pipe and Tubes: ASTM B 429.

4. Structural Profiles: ASTM B 308/B 308M.

5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00, applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.

2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.

3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction: Thermally broken.

2. Glazing System: Retained mechanically with gaskets on four sides.

3. Glazing Plane: Center.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous strips for joining system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.

2. Reinforce members as required to receive fasteners threads.

D. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

E. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Division 8 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard glazing types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

ENTRANCE DOOR SYSTEMS

A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.

1. Door Construction: 1-3/4-inch (45.5-mm) overall thickness, with minimum 0.125-inch (3.2-mm)-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and filed welded or that incorporate concealed to rods.

a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

2. Door Design: Medium stile; 5-1/2-inch (88.9-mm) nominal width.

a. Accessible Doors: Smooth surface for width of door in area within 10 inches (255 mm) above floor and ground plane.

3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum studs and preformed gaskets.

a. Provide nonremovable glazing stops on outside of door.

2.6 ENTRANCE DOOR HARDWARE

A. General: Provide entrance door hardware for each entrance door to comply with requirements in this Section. See hardware schedule on drawings for additional hardware requirements.

1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products complying with BHA 156.6.

2. Opening Force Requirements:

a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.

b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.

B. Opening Force Requirements:

1. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force of not more than 15 lbf (67 N) for not more than 3 seconds.

2. Latches and Exit Devices: Not more than 15 lbf (67 N) required to release latch.

C. Pivot Hinges: BHA 156.4, Grade 1.

1. Offset-Pivot Hinges: Pivot top, bottom, and intermediate offset pivots at each door leaf.

2. Strikes: Provide strike with black-plastic bush for each lock or lock bolt, fabricated for aluminum framing.

E. Operating Trim: BHA 156.6.

F. Silencers: BHA 156.16, Grade 1.

2.7 ACCESSORY MATERIALS

A. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC Paint 12 requirements except containing no asbestos, formulated for 30-ml (1.06-ounce) per sq. ft. (672-mm² per sq. ft.).

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from surfaces by descaling or grinding.

C. Framing Members: General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.

2. Accurately fitted joints with ends coped or mitered.

3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.

4. Physical and thermal isolation of glazing from framing members.

5. Accommodations for thermal and mechanical movements of glazing and framing to maintain.

6. Provisions for field replacement of glazing from exterior.

7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finish.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

A. As indicated on drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.

2. Do not install damaged components.

3. Fit joints to produce hairline joints free of burrs and distortion.

4. Rigidly secure nonmovement joints.

5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.

6. Seal joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.

2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

F. Install glazing as specified in Division 8 Section "Glazing."

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.

2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

SECTION 08710 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes the following:

1. Commercial door hardware.

B. See Division 8 door sections for astragals and door silencers.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Details of electrical hardware, including wiring diagrams.

C. Other Action Submittals:

1. Door Hardware Sets: Prepared by or under the supervision of installer, detailing fabrication and assembly of door hardware, as well as procedures and diagrams.

a. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.

B. Content: Include the following information:

1. Identification number, location, hand, fire rating, and material of each door and frame.

2. Type, size, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.

3. Complete designations of every item required for each door or opening including name and manufacturer.

4. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.

2. Keying Schedule: Prepared by or under the supervision of installer, detailing Owner's final keying instructions for locks.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.4 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion, except as follows:

a. Exit Devices: 20 years from date of Substantial Completion.

b. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in door and frame schedule.

B. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.

A. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.

2.2 HINGES, GENERAL

A. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

B. Hinge Schedule: Manufacturer's standard hinges, including the following:

1. Exterior Hinges: Brass, with stainless steel pin body and brass protruding heads.

2. Interior Hinges: Steel, with steel pin.

C. Nonremovable Pivots: Provide hinges with hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outstanding exterior hinges.

D. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.

2. Wood Screws: For wood doors and frames.

3. Tapped-to-the-Head Wood Screws: For fire-rated wood doors.

4. Screws: Phillips head machine screws (drill and tapped holes) for metal doors and wood screws for wood doors and frames. Finish screw heads to match surface of hinges.

2.3 HINGES

A. Butts and Hinges: BHA 156.1.

B. Template Hinge Dimensions: BHA 156.7.

2.4 LOOKS AND LATCHES, GENERAL

A. Accessibility Requirements: Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Lock Touch: Comply with testing requirements for length of bolts required for labeled fire doors.

D. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

E. Strikes: Manufacturer's standard strikes for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set.

2.5 MECHANICAL LOOKS AND LATCHES

A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:

1. Bored Locks: BHA 156.2.

B. Bored Locks: BHA 156.2, Grade 1 unless Grade 2 is indicated; Series 4000.

2.6 DOOR BOLTS

A. Bolt Touch: Comply with testing requirements for length of bolts required for labeled fire doors.

B. Deadbolt Strikes: BHA 156.16, Grade 1.

C. Manual Flush Bolts: BHA 156.16, Grade 1 unless Grade 2 is indicated; designed for mortising into door edge.

D. Automatic and Self-Latching Flush Bolts: BHA 156.3, Grade 1 unless Grade 2 is indicated; designed for mortising into door edge.

2.7 EXIT DEVICES

A. Exit Devices: BHA 156.3, Grade 1 unless Grade 2 is indicated.

B. Accessibility Requirements: Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to U.L. 305.

E. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

F. Outside Trim: With pull cylinder material and finish to match locksets, unless otherwise indicated.

G. Through Bolts: For exit devices and trim on metal doors.

2.8 LOCK CYLINDERS

A. Standard Lock Cylinders: BHA 156.5, Grade 1 unless Grade 2 is indicated.

B. Cylinders: Manufacturer's standard tubular type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:

1. Number of Pins: Seven.

C. Permanent Cores: Manufacturer's standard; finish face to match lockset; with interchangeable cores.

D. Construction Keying: Comply with the following:

1. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

2.9 KEYING

A. Keying System: Factory registered, complying with guidelines in BHA 156.28, Appendix A. Incorporate decisions made in keying conference into grand master key system.

B. Keys: Nickel silver; permanently inscribed with a visual key control number and including the notation "DO NOT DUPLICATE."

1. Quantity: In addition to one extra key blank for each lock, provide three cylinder change keys and five grand master keys.

2.10 OPERATING TRIM

A. Standard: BHA 156.6.

B. Materials: Fabricate from aluminum unless otherwise indicated.

2.11 CLOSERS

A. Accessibility Requirements: Comply with the following maximum opening-force requirements:

1. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to minimum required width.

C. Hold-Open Closers/Detectors: Coordinate and interface for glass smoke detector and closer device with fire alarm system.

D. Flush Floor Plates: Provide finish cover plates for floor closers unless thresholds are indicated. Match door hardware finish, unless otherwise indicated.

E. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

F. Surface Closers: BHA 156.4, Grade 1 unless Grade 2 is indicated. Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated.

G. Coordinators: BHA 156.3.

2.12 PROTECTIVE TRIM UNITS

A. Size: 1-1/2 inches (38 mm) less than door width on push side and 1/2 inch (13 mm) less than door width on pull side, by height specified in door hardware sets.

B. Metal Protective Trim Units: BHA 156.6, beveled top and 2 sides; fabricated from material indicated in door hardware sets.

C. Plastic Protective Trim Units: BHA 156.6, beveled 4 sides; fabricated from material indicated in door hardware sets.

2.13 STOPS AND HOLDERS

A. Stops and Bumpers: BHA 156.16, Grade 1 unless Grade 2 is indicated.

1. Provide floor stops for doors unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Where floor or wall stops are not appropriate, provide overhead holders.

2.14 DOOR GASKETING

A. Standard: BHA 156.22.

B. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

3. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

C. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable from sticky materials.

D. Gasketing Materials: ASTM D 2000 and AAMA 701702.

2.15 THRESHOLDS

A. Standard: BHA 156.21.

B. Accessibility Requirements: Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds that are not more than 1/2 inch (13 mm) high.

C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch (13 mm) high.

END OF SECTION 08710

2.16 FABRICATION

A. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Finish metals of a quality equal to or greater than that of specified door hardware units and BHA 156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

B. Fasteners: Provide screws according to commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Comply with NFPA 80 for fasteners of door hardware in fire-rated applications.

C. Finishes: BHA 156.18, as indicated in door hardware sets.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Steel Doors and Frames: Comply with DHI A115 Series. Drill and tap doors and frames for surface-applied door hardware according to ANSI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

C. Mounting Heights, as well as mounting hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."

3. Wood Doors: DHI WDHS-3, "Recommended Locations for Architectural Hardware for Wood Finish Doors."

D. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to complete its closing stroke, measured at a 3 inches (75 mm) from the latch, measured to the leading edge of the door.

3.2 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

END OF SECTION 08710

SECTION 08800 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Doors.

2. Glazed entrances.

3. Storefront framing.

1.2 DEFINITIONS

A. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

B. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1.3 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Samples: 12-inch (300-mm) square, for each type of glass product indicated, other than monolithic clear float glass.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 GLASS PRODUCTS

A. Insulating-Glass Units: General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in Part 2 "Insulating-Glass Units" Article.

1. Provide Kind H (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of insulating glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.

2. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.

3. Sealing System: Dual seal.

4. Spacer Specifications: Manufacturer's standard spacer material and construction.

a. Corner Construction: Manufacturer's standard corner construction.

2.3 GLAZING GASKETS

A. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets of material indicated below, complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal.

1. Neoprene.

2. EPDM.

3. Silicone.

4. Thermoplastic polyolefin rubber.

5. Any material indicated above.

2.4 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for lateral movement.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass installation movement (side walking).

2.5 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units to sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

2.6 INSULATING-GLASS UNITS

A. Solar-Control Low-E Insulating-Glass Units:

1. Available Products manufactured by:

a. FPG.

b. Viracon.

c. Oldcastle Glass.

2. Overall Unit Thickness and Thickness of Each Lite: 25 and 6.0 mm.

3. Interspace Control: Air or Argon.

4. Outdoor Lite: Class 1 (clear) float glass.

a. Annealed or Kind FT (fully tempered) where indicated on drawings.

b. Self-Cleaning, Low-Maintenance Coating: Pyrolytic coating on first surface.

5. Indoor Lite: Class 1 (clear) float glass.

a. Annealed or Kind FT (fully tempered) where indicated on drawings.

6. Low-E Coating: Pyrolytic on second surface.

7. Visible Light Transmittance: Not less than 0.70.

8. Winter Nighttime U-Factor: 0.32 maximum.

9. Summer Daytime U-Factor: 0.32 maximum.

10. Solar Heat Gain Coefficient: 0.45 maximum.

11. Outdoor Visible Reflectance: 12 percent maximum.

PART 3 - EXECUTION

3.1 GLAZING

A. General: Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

1. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

2. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

3. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction substrate-substrate testing.

4. Install setting blocks in sill rabbets, seal and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

5. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

6. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

7. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

B. Gasket Glazing (Dry): Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit coverings exactly with allowance for stretch during installation.

1. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

2. Center glass lites in openings on setting blocks and press firm against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

3. Install gaskets so they protrude past face of glazing stops.

3.2 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to exterior glass and hold away markers to glass surface. Remove nonpermanent labels, and clean surfaces. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

B. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

END OF SECTION 08800

SECTION 09111 - NON-LOAD-BEARING STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes non-load-bearing steel framing members for the following applications:

1. Interior framing systems (e.g., supports for partition walls, framed soffits, etc.).

2. Interior suspension systems (e.g., supports for ceilings, suspended soffits, etc.).

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.

2. Protective Coating: ASTM A 653/A 653M, G40 (2120), hot-dip galvanized zinc coating, unless otherwise indicated.

2.2 SUSPENSION SYSTEM COMPONENTS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.

B. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch (4.12-mm) diameter.

C. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch (1.37 mm) and minimum 1/2-inch- (12.7-mm-) wide flanges.

1. Depth: 2-1/2 inches (64 mm).

2. Furring Channels (Furring Members):

a. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22.2 mm) deep.

a. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).

2.3 STEEL FRAMING FOR FRAMED ASSEMBLIES

A. Steel Studs and Runners: ASTM C 645.

1. Minimum Base Metal Thickness: As indicated on Drawings.

B. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- (50.8-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.

2. Deflection Track: Steel sheet with runner manufactured to prevent cracking of finishes and to provide to interior partition framing resulting from deflection of structure above in thickness not less than indicated for studs and in width to accommodate depth of studs.

a. Products: Subject to compliance with requirements, provide one of the following:

a. Steel Network Inc. (The) VeriClip 3-D System.

C. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base Metal Thickness: As indicated on Drawings.

D. Cold-Rolled Channel Bridging: 0.0538-inch (1.37-mm) base-steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flanges.

1. Depth: As indicated on Drawings.

2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38.1 by 38.1 mm), 0.068-inch- (1.73-mm-) thick, galvanized steel.

E. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base Metal Thickness: As indicated on Drawings.

2. Depth: As indicated on Drawings.

3. Cold-Rolled Furring Channels: 0.0538-inch (1.37-mm) bare-steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flanges.

1. Depth: As indicated on drawings.

2. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.

G. Z-shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (31.8 mm), and attachment flange of 7/8 inch (22.2 mm), minimum bare-metal thickness of 0.0170 inch (0.45 mm), and depth required to fit insulation thickness indicated.

2.4 AUXILIARY MATERIALS

A. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Wall: Provide the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754.

1. Framing Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

3.2 INSTALLING SUSPENSION SYSTEMS

A. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

B. Suspend framing from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers with 1/4-inch (6.4 mm) gap between hangers and ceiling and offset resulting horizontal forces by bracing, counterbalancing, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger openings that interfere with ceiling structure, use hangers that extend through ceiling to support members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Do not attach hangers to steel roof deck.

4. Do not connect or suspend steel framing from ducts, pipes, or conduit.

C. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

D. Installation Tolerances: Install suspension systems that are level within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.3 INSTALLING FRAMED ASSEMBLIES

A. Where studs are installed directly against exterior masonry walls or dissimilar materials at exterior walls, install isolation strip between studs and exterior wall.

B. Install tracks with 1/4-inch (6.4 mm) gap between studs and exterior wall.

1. Extend framing extends to overhead structural supports, install to terminate at suspended ceilings. Continue framing around doors penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at ends of framing systems that prevent axial sliding of finished assemblies.

2. Door Openings: Screw vertical studs at jambs to jambs and secure to jamb studs.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at ends of framing systems that prevent axial sliding of finished assemblies.

a. Install two studs at each jamb, unless otherwise indicated.

b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (12.7 mm) clearance from jamb stud to allow for installation of control joint in finished assembly.

c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sides of openings to match framing required above door heads.

4. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

5. Curved Partitions:

a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.

b. Begin and end each arc at a stud, and space intermediate studs equally along arcs. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches (150 mm) o.c.

C. Direct Framing:

1. Screw to wood framing.

2. Attach to concrete or masonry with stud nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

D. Z-Furring Members:

1. Erect insulation (specified in Division 7 Section "Building Insulation") vertically and hold in place with Z-furring members spaced 24 inches (610 mm) o.c.

2. Except at exterior corners, securely attach rim flanges of furring members to wall with concrete stud nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner, on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (300 mm) from corner and cut insulation to fit.

END OF SECTION 09111

SECTION 09250 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Interior gypsum board.

2. Exterior gypsum board for ceilings and soffits.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each type of product:

1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

PART 2 - PRODUCTS

2.1 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36C 36M or ASTM C 1396C 1396M, as applicable to type of gypsum board indicated and whichever is most stringent.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Gypsum Co.

b. G-P Gypsum.

c. USC Corporation.

B. Regular Type:

1. Thickness: 1/2 inch (12.7 mm).

2. Long Edges: Tapered.

C. Type:

1. Thickness: 5/8 inch (15.9 mm).

2. Long Edges: Tapered.

D. Flexible Type: Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.

1. Thickness: 1/4 inch (6.4 mm).

2. Long Edges: Tapered.

E. Ceiling Type: Manufactured to have more sag resistance than regular-type gypsum board.

1. Thickness: 1/2 inch (12.7 mm).

2. Long Edges: Tapered.

F. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.

1. Core: 5/8 inch (15.9 mm), Type X.

2. Long Edges: Tapered.

2.2 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS

A. Exterior Gypsum Soffit Board: ASTM C 931/C 931M or ASTM C 1396C 1396M, with manufacturer's standard edges.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Gypsum Co.

b. G-P Gypsum.

c. USC Corporation.

2. Core: 5/8 inch (15.9 mm), Type X.

B. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M.

1. Product: Subject to compliance with requirements, provide "Dens-Glass Gold" by G-P Gypsum.

2. Core: 5/8 inch (15.9 mm), Type X.

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized

SECTION 0991.1 - EXTERIOR PAINTING	
PART 1 - GENERAL	
1.1 SUMMARY	A. This Section includes surface preparation and the application of paint/sealer systems on the following exterior substrates: - Concrete masonry units (CMU). - Steel. - Galvanized metal. - Exterior gypsum board. - Through-wall masonry units.
1.2 SUBMITTALS	A. Product Data: For each type of product indicated. B. Samples: For each finish and for each color and texture required.
1.3 QUALITY ASSURANCE	A. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. - Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3. - Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m). - Other Items: Architect will designate items or areas required. - Final approval of color selections will be based on benchmark samples. - If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
PART 2 - PRODUCTS	
2.1 PAINT, GENERAL	
A. Material Compatibility: - Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience. - For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.	
B. Colors: As selected by Architect from manufacturer's full range.	
PART 3 - EXECUTION	
3.1 EXAMINATION	A. Examine substrates and conditions, with Applicant present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work. B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows: - Concrete: 12 percent. - Masonry (Cure and CMU): 12 percent. - Wood: 15 percent. - Plaster: 12 percent. - Gypsum Board: 12 percent. C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry. - Beginning coating application constitutes Contractor's acceptance of substrates and conditions.
3.2 PREPARATION AND APPLICATION	
A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated. B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants. - Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated. - Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks. - Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition. - At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. - For electricometric coatings on masonry or concrete the contractor shall patch and/or seal all cracks, crevices, through-wall openings, and voids in mortar with the paint manufacturers approved patching/sealing product.	
3.3 EXTERIOR PAINTING SCHEDULE	
A. CMU Substrates: - High-Build Elastic Latex System: MPI EXT 4.2K, applied to form dry film thickness of not less than 10 mils (0.25 mm). - Prime Coat: As recommended in writing by topcoat manufacturer. - Intermediate Coat: As recommended in writing by topcoat manufacturer. - Topcoat: High-build latex (exterior).	
B. Steel Substrates: - Quick-Drying Enamel System: MPI EXT 5.1A. - Prime Coat: Quick-drying alkyd metal primer. - Intermediate Coat: Quick-drying enamel matching topcoat. - Topcoat: Quick-drying enamel (semigloss).	
C. Galvanized-Metal Substrates: - Latex System: MPI EXT 5.3A. - Prime Coat: Cementitious galvanized-metal primer. - Intermediate Coat: Exterior latex matching topcoat. - Topcoat: Exterior latex (semigloss).	
D. Exterior Gypsum Board Substrates: - Latex System: MPI EXT 6.2A. - Prime Coat: Exterior latex matching topcoat. - Intermediate Coat: Exterior latex matching topcoat. - Topcoat: Exterior latex (semigloss).	
E. Exterior concrete walls: - Clear silicone acrylic System: - Prime Coat: Clear silicone acrylic based waterproof sealer. - Topcoat: Clear silicone acrylic based waterproof sealer.	
END OF SECTION 0991.1	
SECTION 0991.2 - INTERIOR PAINTING	
PART 1 - GENERAL	
1.1 SUMMARY	A. This Section includes surface preparation and the application of paint systems on the following interior substrates: Gypsum board.
1.2 SUBMITTALS	A. Product Data: For each type of product indicated. B. Samples: For each finish and for each color and texture required.
PART 2 - PRODUCTS	
2.1 PAINT, GENERAL	
A. Material Compatibility: - Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience. - For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.	
B. Colors: As indicated on drawings.	
PART 3 - EXECUTION	
3.1 EXAMINATION	A. Examine substrates and conditions, with Applicant present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work. B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows: - Gypsum Board: 12 percent. C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry. - Beginning coating application constitutes Contractor's acceptance of substrates and conditions.
3.2 PREPARATION AND APPLICATION	
A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated. B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants. - Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks. - Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition. - At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.	
3.3 INTERIOR PAINTING SCHEDULE	
A. Gypsum Board Substrates: - Latex System: MPI INT 9.2A. - Prime Coat: Interior latex primer/sealer. - Intermediate Coat: Interior latex matching topcoat. - Topcoat: Interior latex (eggshell).	
END OF SECTION 0991.2	
SECTION 1052.2 - FIRE EXTINGUISHERS	
PART 1 - GENERAL	
1.01 SCOPE OF WORK	A. Furnish all labor, materials and equipment required for the installation of bracket mounted fire extinguishers as herein described.
1.02 RELATED SECTIONS	
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.	
1.03 SUBMITTALS	
A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections: Product data and details showing mounting methods.	
1.04 QUALITY ASSURANCE	
A. Single-Source Responsibility: Obtain extinguishers from one source from a single manufacturer. B. UL-Listed Products: Fire extinguishers shall be UL listed with UL listing mark for type, rating, and classification of extinguisher. C. FM-Listed Products: Fire extinguishers approved by Factory Mutual Research Corporation for type, rating, and classification of extinguisher with FM marking.	

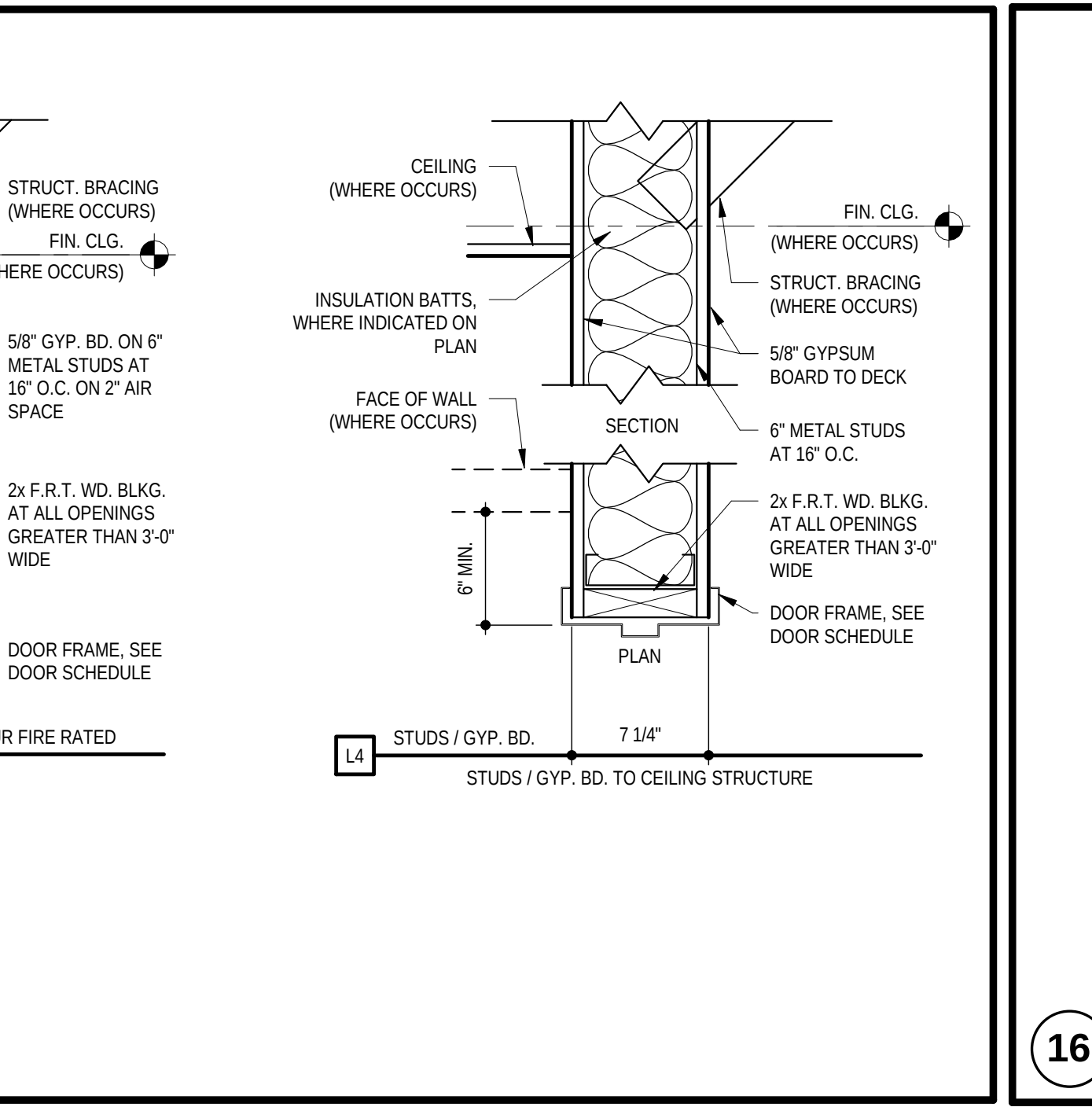
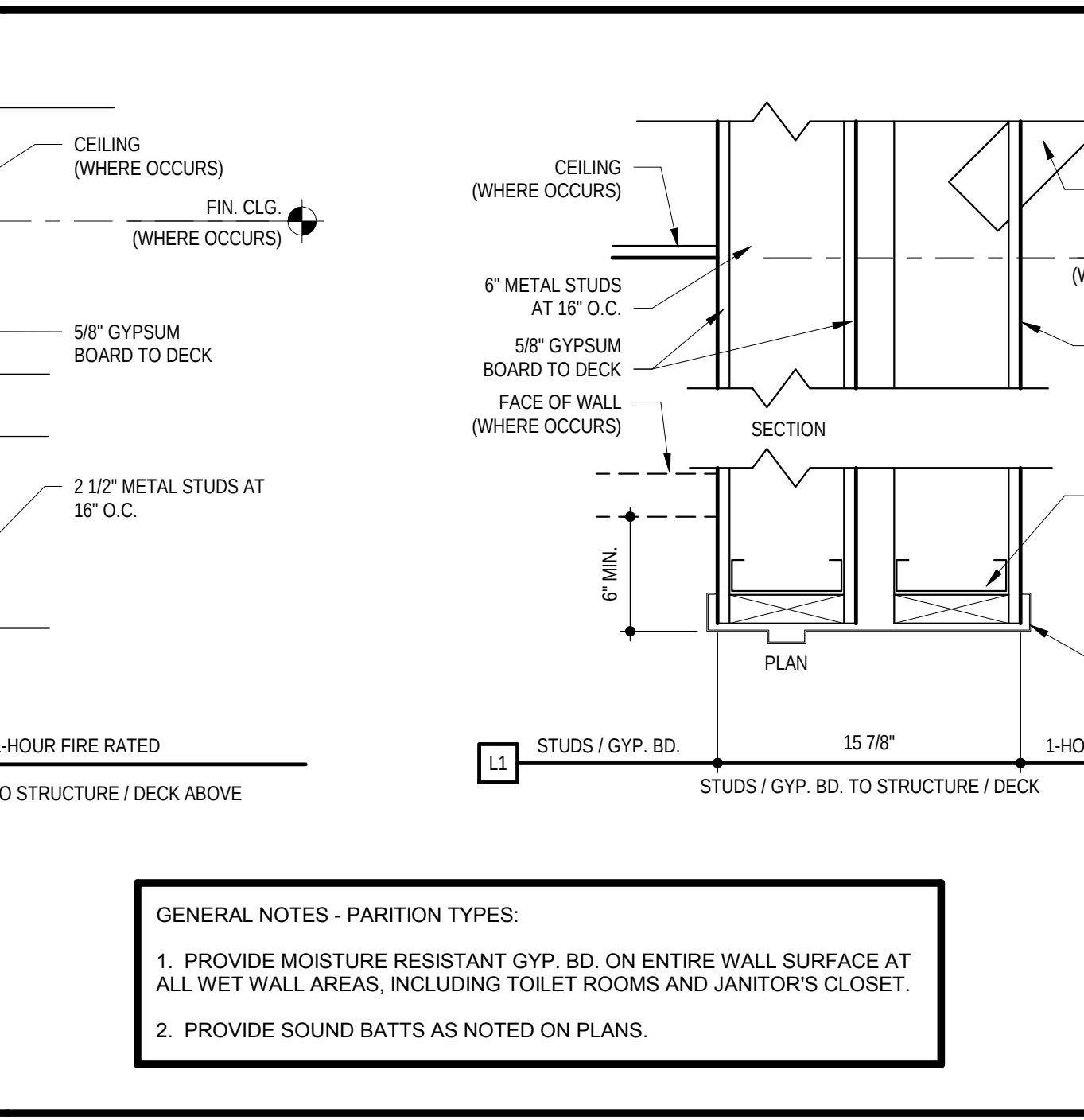
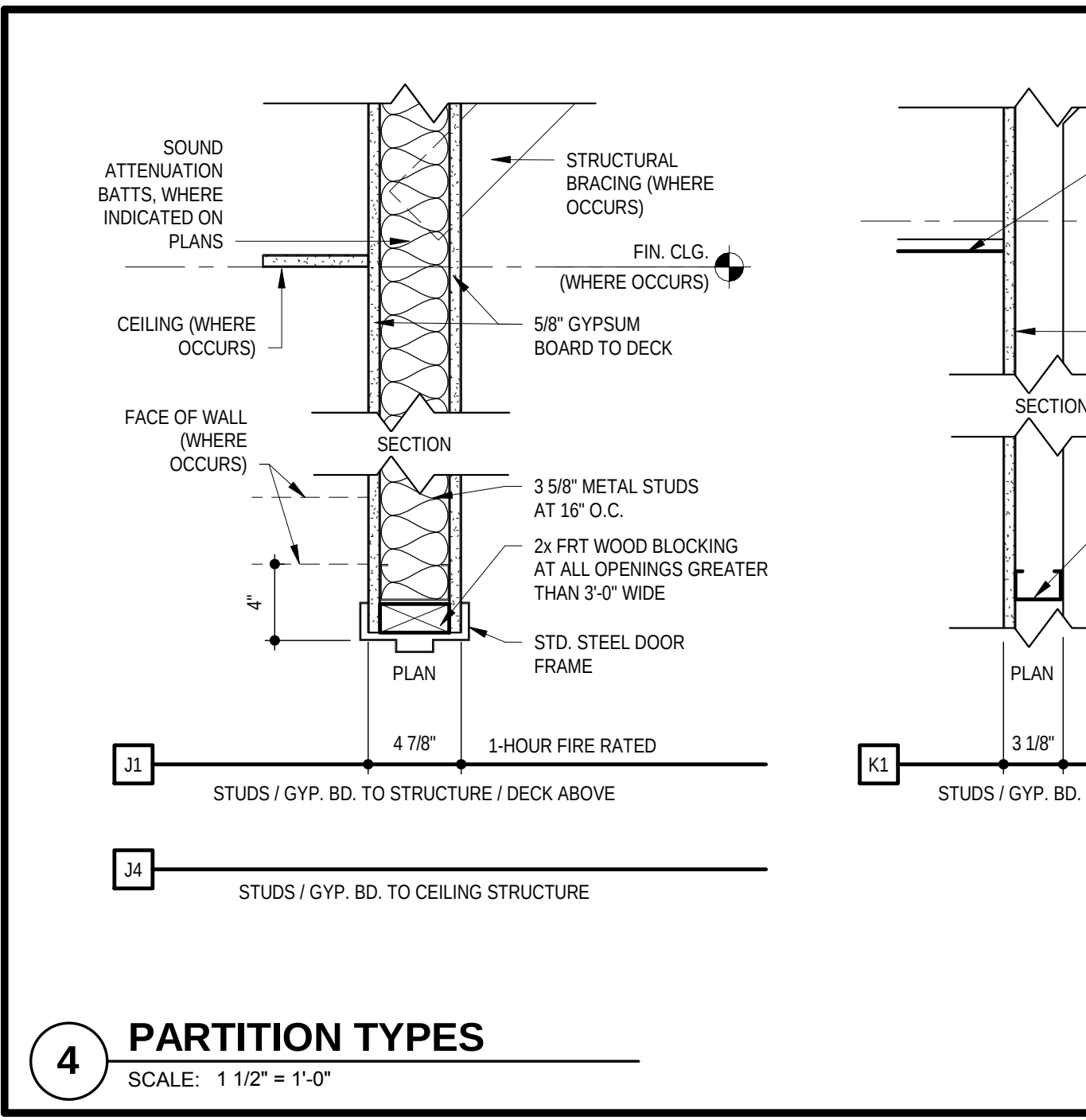
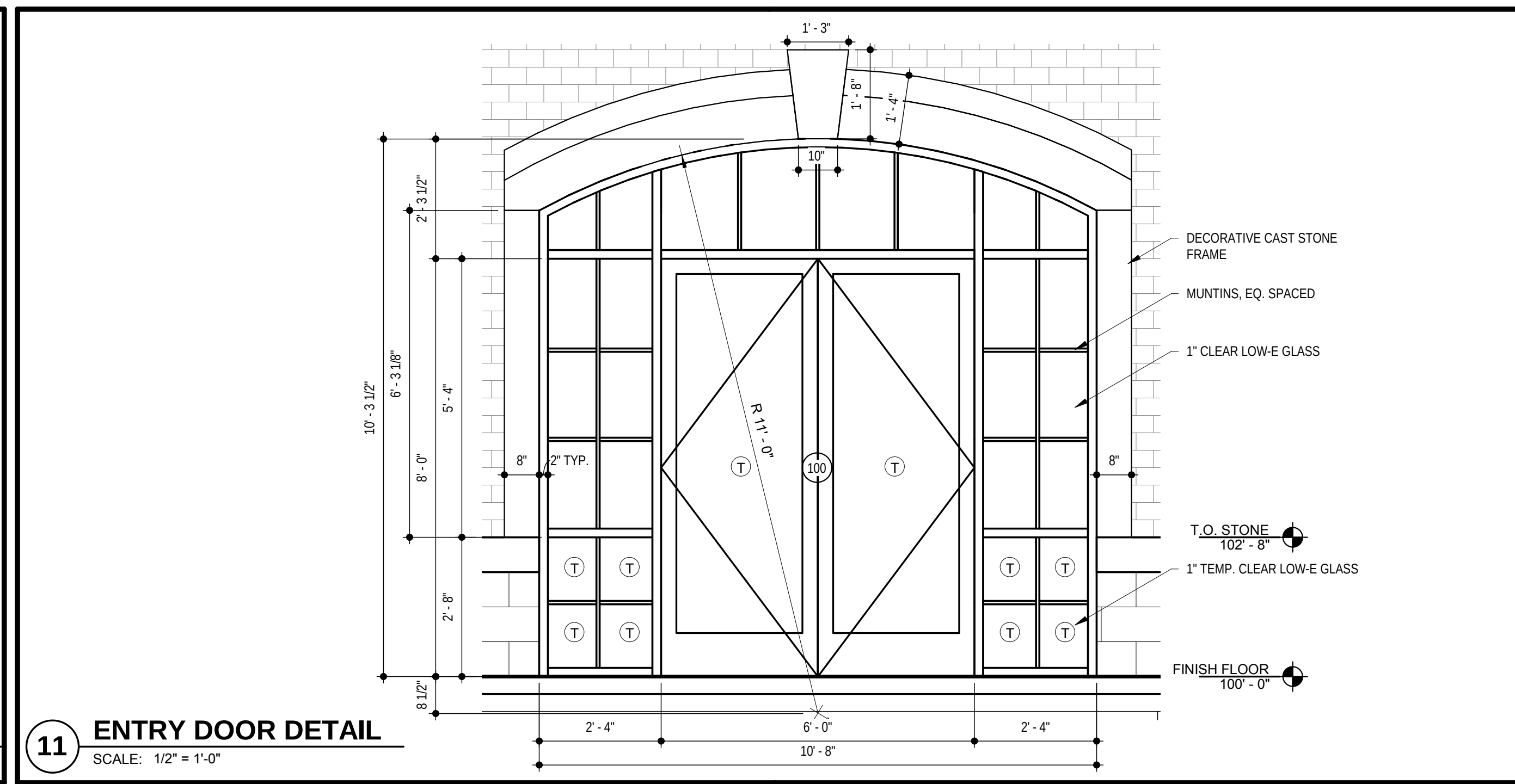
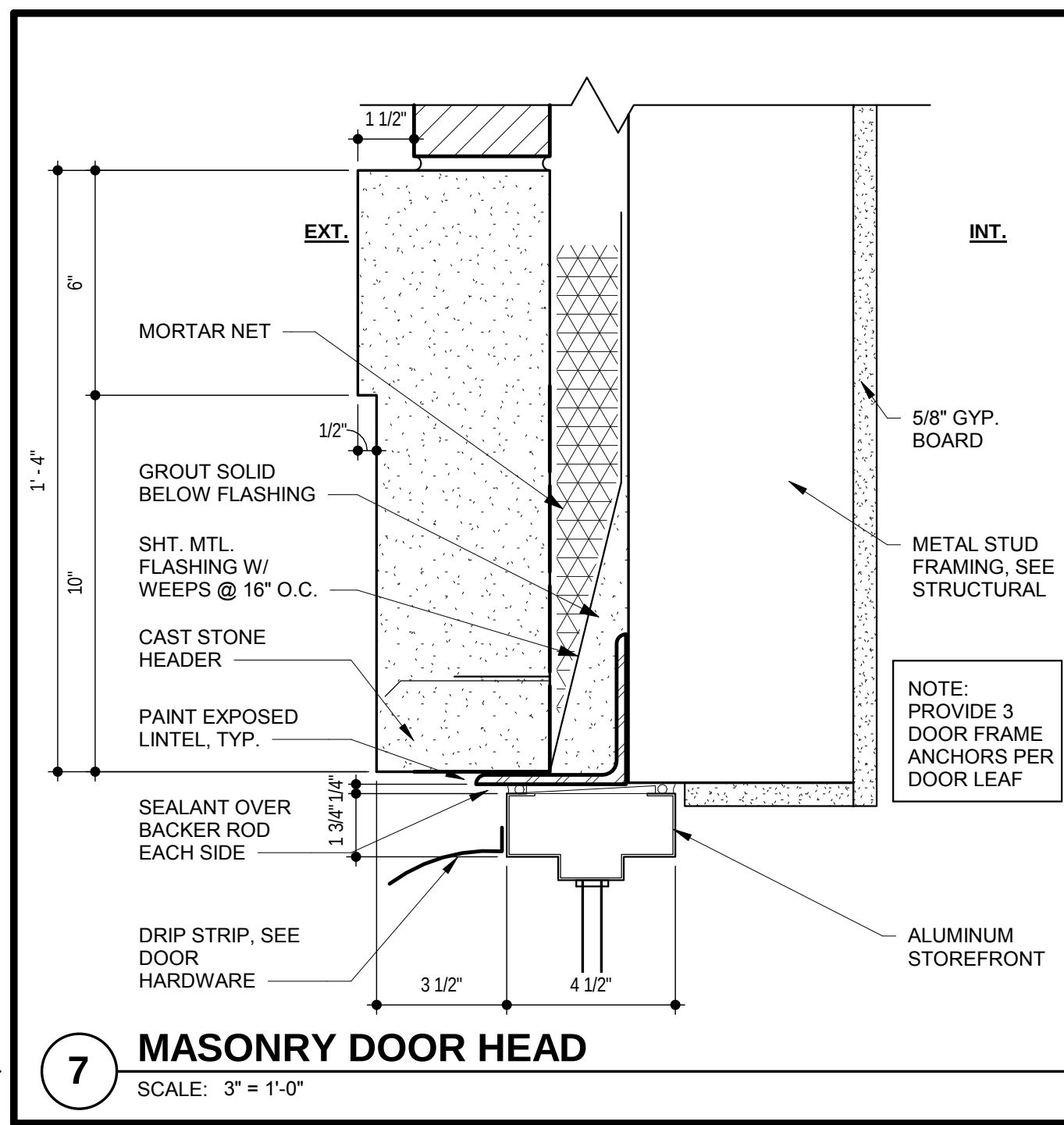
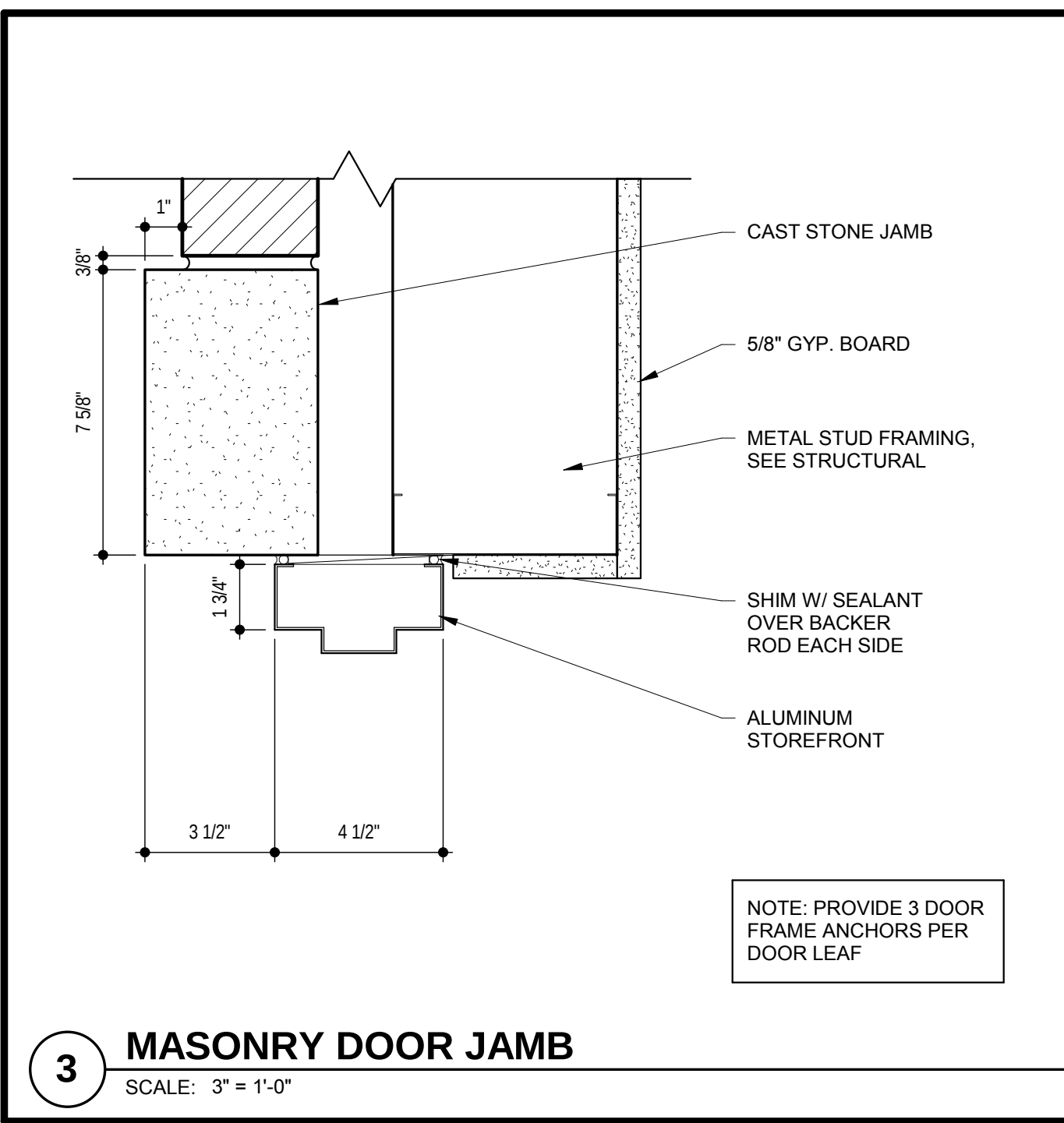
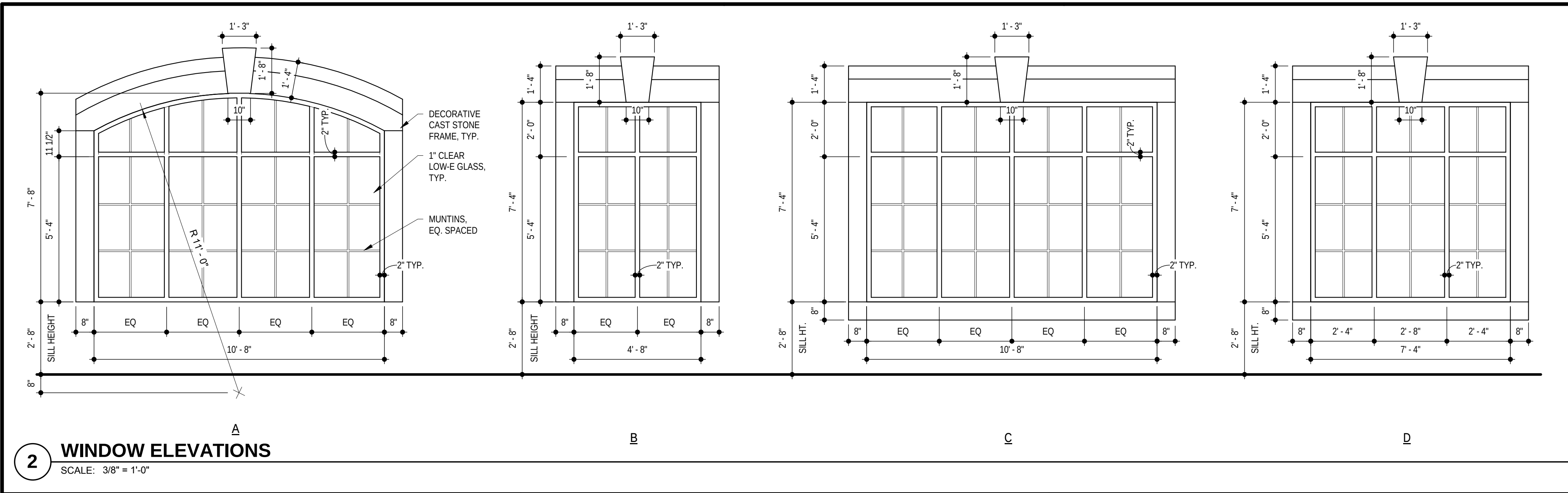
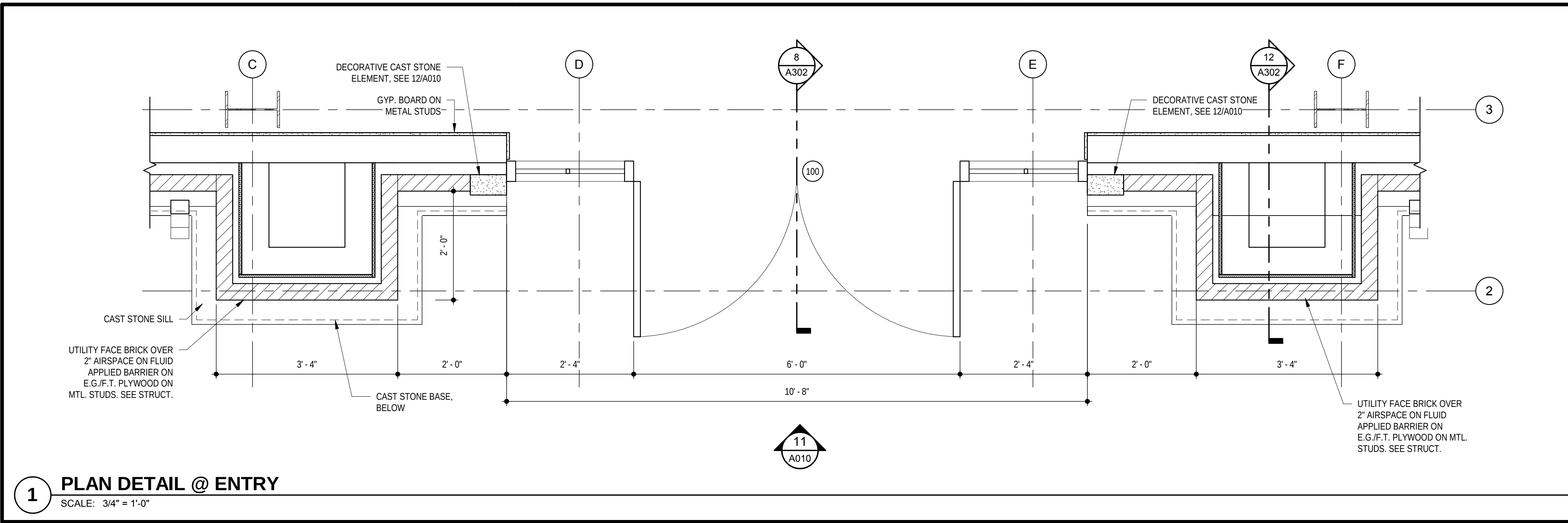
PART 2 - PRODUCTS	
2.01 MANUFACTURERS	
A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following: - Ansul Fire Protection. - J.L. Industries. - Larsen's Manufacturing Co.	
2.02 FIRE EXTINGUISHERS	
A. Multipurpose Dry Chemical Type: UL-rated 1-A:10-B:C, 2-1/2-lb nominal capacity, in enameled steel container.	
2.03 MOUNTING BRACKETS	
A. Brackets: Designed to prevent accidentally dislodging extinguisher, of sized required for type and capacity of extinguisher indicated, in plated finish. B. Provide brackets for extinguishers. C. Identify bracket-mounted extinguishers with FIRE EXTINGUISHER in red letter decals. D. Use letter size, style, and location as selected by Architect.	
2.04 QUANTITIES	
A. Provide a minimum of one (1) unit with a maximum travel distance of 75'-0" for placement. Provide additional units at the locations to be determined by the Fire Marshal.	
PART 3 - EXECUTION	
3.01 INSPECTION	
A. Verify Mounting Locations: - Verify that mounting locations for bracket mounted fire extinguisher are correctly sited in correct linear location and are at the correct vertical mounting heights. - Verify that all required exposed or concealed metal or wood blocking has been installed to support surface bracket mounted F.E. units. - Start of installation indicates installer's and Contractor's acceptance of existing conditions. Any conditions subsequently found to be unacceptable are to be reworked with no added cost or delay in completion.	
3.02 INSTALLATION	
A. Mount units as directed by local fire authorities, and in accordance with requirements of the Americans Disability Act. - The A.D.A. may require that the fire extinguishers scheduled for surface bracket mounting be recessed or semi-recessed in columns and walls, so that the unit projections into the clear pathway does not exceed the allowable 4" maximum. - Mark units with paint or similar marking as required. - Provide and install and fire Marshall required graphic fire extinguisher signage indicating location of Fire Extinguishers. - Finish wall surfacing material F.R.P. and Ceramic Tile are to lap behind the F.E. wall and column mounted F.E. brackets, and are to be installed prior to installing brackets. Painted wall finishes may be applied to walls after cabinets and brackets are installed. - Follow manufacturer's printed instructions for installation. - Install in locations and at mounting heights indicated or, if not indicated, at heights to comply with applicable regulations of governing authorities. - Fasten mounting brackets, square and plumb.	
3.03 PROTECTION	
A. Provide protection for installed fire extinguishers in accordance with manufacturer's recommendations. B. Provide protection for work before, during and after completion and unit Owner acceptance. C. Any units damaged that cannot be repaired, are to be removed and replaced at no extra cost to Owner or delays in completion.	
3.04 ADJUST AND CLEAN	
A. Final Cleanup: - Perform final cleanup in accordance with Section 01710-Cleaning. - Just prior to turn-over clean and rag polished all units.	
B. Final Adjustments: Perform all adjustments to fire extinguisher units including smooth operation of all locks, valves, etc. in accordance with manufacturer's recommendations.	
3.05 MAINTENANCE	
A. Provide all required training and instruction for Owner's representative for access, operation, and storage of fire extinguisher units. Assist Tenant in scheduling any required fire department final inspections of fire extinguisher installation with Owner's representatives present.	
END OF SECTION 1052.2	
SECTION 1052.6 - FIRE DEPARTMENT LOCK BOX	
PART 1 - GENERAL	
1.1 SUMMARY	A. Section Includes: - Lock box key vault for fire department emergency building access. - Coordination and ordering requirements.
1.2 QUALITY ASSURANCE	
A. Pre-Installation Meetings: Meet with fire department to determine requirements for lock box type and coordinate exact location for installation and mounting of box on building with fire department and Architect.	
PART 1 - PRODUCTS	
2.1 MANUFACTURERS	
A. Knox Box by The Knox Company, Irvine, CA Phone: (800) 552-5669 FAX: (949) 252-0482. B. Alternate Manufacturers: As approved by fire department.	
2.2 MANUFACTURED UNITS	
A. Lock Box: UL labeled, weather resistant, factory finished, recessed, heavy duty steel lock box. B. Model: Type and size as required by fire department. C. Ordering: Complete manufacturer's Authorization/Order Form and obtain local fire department authorized signature on form before processing.	
PART 3 - EXECUTION	
3.1 INSTALLATION	A. Install lock box at location required by fire department in accordance with manufacturers published instructions.
END OF SECTION 1052.6	
SECTION 1424.1 MACHINE ROOM-LESS HYDRAULIC PASSENGER ELEVATORS	
PART 1 GENERAL	
1.01 SUMMARY	A. Section includes: Machine room-less hydraulic passenger elevators as shown and specified. B. Elevator work includes: - Standard pre-engineered hydraulic passenger elevators. - Elevator car enclosures, hoistway entrances and signal equipment. - Operation and control systems. - Jack(s). - Accessibility provisions for physically disabled persons. - Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity. - Materials and accessories as required to complete the elevator installation.
2.1 MANUFACTURERS	
A. Knox Box by The Knox Company, Irvine, CA Phone: (800) 552-5669 FAX: (949) 252-0482. B. Alternate Manufacturers: As approved by fire department.	
2.2 MANUFACTURED UNITS	
A. Lock Box: UL labeled, weather resistant, factory finished, recessed, heavy duty steel lock box. B. Model: Type and size as required by fire department. C. Ordering: Complete manufacturer's Authorization/Order Form and obtain local fire department authorized signature on form before processing.	
PART 3 - EXECUTION	
3.1 INSTALLATION	A. Install lock box at location required by fire department in accordance with manufacturers published instructions.
END OF SECTION 1052.6	

PART 2 PRODUCTS	
2.01 MANUFACTURERS	
A. Manufacturer: Basis-of-Design is the Thyssen Krupp's Endura Machine Room-Less hydraulic elevator. - Approved Elevator Manufacturers: - Kone - Otis - Schindler - Thyssen Krupp	
2.02 MATERIALS, GENERAL	
A. All Elevator Cab materials including frame, buttons, lighting, wall and ceiling assembly, laminates and carpet shall have an EPD and an HPD. B. Colors, patterns, and finishes: As selected by the Architect from manufacturer's full range of standard colors, patterns, and finishes. C. Steel: - Shapes and bars: Carbon. - Sheet: Cold-rolled steel sheet, commercial quality, Class 1, matte finish. - Finish: Factory-applied baked enamel for structural parts, powder coat for architectural parts. Color selection must be based on elevator manufacturer's standard selections.	
D. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050" thickness. Laminate selection must be based on elevator manufacturer's standard selections.	
E. Flooring by others.	
2.03 HOISTWAY EQUIPMENT	
A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood sub-floor. Underside of the platform shall be fireproofed. The car platform must be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity. B. Sling: Steel stiles bolted or welded to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure. C. Guide Rails: Steel, omega shaped, fastened to the building structure with steel brackets. D. Guides: Slide guides shall be mounted on top and bottom of the car. E. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions. F. Jack: A jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to insure adequate load capacity. The jack shall be fireproofed. The car platform must be prohibited in the jack construction. Provide the following jack type: Twin post hollow telescopic 2-stage. Two jacks piped together, mounted one on each side of the car with each having two telescopic sections designed to extend in a synchronized manner when oil is pumped into the assembly. Each jack section will be guided from within the casing or the plunger assembly used to house the section. Each plunger shall have a high pressure sealing system which will not allow for seal movement or displacement during the course of operation. Each jack assembly shall have a check valve built into the assembly to allow for automatically re-tying the two plunger sections by moving the jack to its fully contracted position. The jack shall be designed to be mounted on the pit floor or in a recess in the pit floor. Each jack section shall have a bleeder valve to discharge any air trapped in the section. G. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for over travel or under travel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load. H. Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary code compliant pipe and fittings shall be provided to connect the power unit to the jack unit. theolypipe I. Pit moisture/water sensor located approximately 1 foot above the pit floor to be provided. Once activated, elevator will perform "flooded pit operation", which will turn the car up to the designated floor, cycle the doors and shut down and trip the circuit breaker shut to remove 3 phase power from all equipment, including pit equipment. J. Motorized oil line shut-off valve shall be provided that can be remotely operated from the controller or landing service panel. Also a means for manual operation at the valve in the pit is required.	
2.04 POWER UNIT	
A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit located in the elevator pit consisting of the following: - NEMA 4/Sealed Oil reservoir with tank cover including vapor removing tank breather - An oil hydraulic pump. - An electric motor. - Electronic oil control valve with the following components built into single housing: high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids. B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.	

- Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating – motors shall be capable of 80 starts per hour with a 30% motor run time during each start. - Oil Control Unit: The following components shall be built into a single housing. Welded manifold with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line. - Relief valve shall be adjustable and capable of being adjusted to the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve. - Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and stop. - Check valve shall be designed to close quietly without permitting any perceptible reverse flow. - Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" stops. - The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated. - Typical door & frame finish: Stainless steel panels, No. 4 brushed finish. - Integrated Control System: The elevator controller to be mounted to hoistway entrance above 1st landing. The entrance at this level shall be designed to accommodate the control system and provide a means of access to critical electrical controls and troubleshooting features. See section 2.08 Control System for additional requirements. - At the controller landing, the hoistway entrance frame shall have space to accommodate and provide a suitable means of access (group 2 security) to a 3 phase circuit breaker. See section 2.11 Miscellaneous Elevator Components for further details. - Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code. - Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door. - Handrails: Provide handrails with ball bearings properly sealed to retain grease. - Hangers: Provide an adjustable device beneath the track to limit the up-trust of the doors during operation. - Handrails: Drawn steel shapes, smooth surface and shaped to conform to the hanger shapes.	
2.06 PASSENGER ELEVATOR CAR ENCLOSURE	
A. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum. B. Car Enclosure: - Recessed plastic laminate wall design, durable wood core finished on both sides with high pressure plastic laminate. - Walls and frieze: Not applicable. - Canopy: Cold-rolled steel with hinged exit. - Canopy: Cold-rolled steel with hinged exit. - Handrail: Provide cast metal handrail on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, No. 4 brushed finish. - Ventilation: Manufacturer's standard exhaust fan, mounted on the car top. - Protection pads and buttons: Provide one set of vinyl protection pads with metal grommets for the project. Provide pad buttons on cab front(s) and walls.	
Car Top Inspection: Provide a car top inspection station with an "Auto-Inspection" switch, an "Emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station shall give the inspector control of the elevator. The car top inspection station shall be mounted in the door operator assembly.	
2.07 DOOR OPERATION	
A. Door Operation: Provide a direct or alternating current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. The door control system shall be a digital closed loop and the closed loop circuit shall give the position feedback on the position and velocity of the elevator door. The motor torque shall be constantly adjusted to maintain the correct door speed when the car is positioned and load. All adjustments and set-up shall be through the inspector control panel. Door movements shall follow a field programmable speed pattern with smooth acceleration and deceleration at the ends of travel. The mechanical door operating mechanism shall be arranged for manual operation in event of power failure. The door shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. AC controlled units with oil checks, or other deviations are not acceptable. - No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car. - Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated. - Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel shall reverse and the door shall reopen to answer the other call. - Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer shall sound. When the obstruction is removed, the door shall begin to close at reduced speed. If the infra-red door protection system senses a person or object while closing on nudging, the doors shall stop and resume closing only after the obstruction has been removed. - Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors shall reverse and reopen. After the obstruction is cleared, the doors shall begin to close. - Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors shall recycle closed then attempt to open six times to try and correct the fault. - Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors shall recycle open then attempt to close six times to try and correct the fault. - Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close. - Door Protection Device: Provide a door protection system using microprocessor controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.	
2.08 CAR OPERATING STATION	
A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied facelate. Wrap return shall have a No. 4 brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED's shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided. - Emergency Communications System: Integral phone system provided. - Auxiliary Operating Panel: Not Required - Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close. - Special Equipment: Not Applicable	
2.09 CONTROL SYSTEMS	
A. Controller: Shall be integrated in a hoistway entrance jamb. Should be microprocessor based, software oriented and protected from environmental extremes and excessive vibrations in a NEMA 1 enclosure. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings. - Service Panel – to be located outside the hoistway in the controller entrance jamb and shall provide the following functionality/features: - Access to main control board and CPU - Main controller diagnostics - Main controller fuses - Universal Interface Tool (UIT) - Remote valve adjustment - Electronic motor speed adjuster and diagnostics - Operation of pit motorized shut-off valve with LED feedback to the state of the valve in the pit - Operation of auxiliary pump/motor (secondary hydraulic power source) - Operation of electrical assisted manual lowering - Provide male plug to supply 110VAC into the controller - Run/Stop button - Automatic Light and Fan shut down. The control system shall evaluate the system activity and automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable. - Emergency Power Operation: (Battery Lowering 10-DOC) When the loss of normal power is detected, a battery lowering feature is to be activated. The elevator will lower to a predetermined level and open the doors. After passengers have exited the car, the doors will close and the car will shutdown. When normal power becomes available, the elevator will automatically resume operation. The battery lowering feature is included in the elevator contract and does not utilize a building-supplied standby power source. - Special Operation: Not Applicable	
2.10 HALL STATIONS	
A. Hall Stations, General: Pushbuttons shall illuminate to indicate call has been registered at that floor for the indicated direction. - Provide one pushbutton riser with facelates having a No. 4 brushed stainless steel finish. - Phase 1 firefighter's service key switch, with instructions, shall be incorporated into the hall station at the designated level. - Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements. - Hall Position Indicator: An electronic dot matrix position indicator shall be provided and mounted for optimum viewing. As the car travels, its position in the hoistway shall be indicated by the illumination of the alphanumeric character corresponding to the landing which the elevator is stopped or passing. When hall lanterns are provided, the position indicator shall be combined with the hall lanterns in the same facelate. Facelates shall match hall stations. Provide at all typical landings. - Hall lanterns: Not Applicable - Special Equipment: Not Applicable	

2.11 MISCELLANEOUS ELEVATOR COMPONENTS	
- Oil Hydraulic Silencer: Install multiple oil hydraulic silencers (muffler device) at the power unit location. The silencers shall contain pulsation absorbing material inserted in a blowout proof housing. - Lockable three phase circuit breaker with auxiliary control with short trip capability to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb and should be sized according to the National Electrical Code. - Lockable single phase 110V circuit breaker for cab light and fan to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb should be sized according to the National Electrical Code.	
PART 3 EXECUTION	
3.01 EXAMINATION	
A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and/or control room, as constructed, verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.	
Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.	
3.02 INSTALLATION	
A. Install elevator systems components and coordinate installation of hoistway wall construction. - Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer's installation instructions and approved shop drawings. - Comply with the National Electrical Code for electrical work required during installation. - Perform work with competent, skilled workers under the direct control and supervision of the elevator manufacturer's experienced foreman. - Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports, and bracing including all setting templates and diagrams for placement work. - Welded construction: Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation; adjustment, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualification of welding operators. - Coordination: Coordinate elevator work with the other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work. - Install machinery, guides, controls, car and all equipment and accessories to provide a quiet, smoothly operating installation, free from side sway, oscillation or vibration. - Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing. - Erect hoistway sills, headers, and frames before erection of rough walls and doors; erect fascia and toe guards after rough walls finished. Set all units accurately aligned and slightly above finish floor at landings. - Lubricate operating parts of system, where recommended by manufacturer.	
3.03 FIELD QUALITY CONTROL	
A. Acceptance Testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required and recommended by Code and governing regulations or agencies. Perform other tests, if any, as required by governing regulations or agencies. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.	
3.04 ADJUSTING	
A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.	
3.05 CLEANING	
A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided. Stainless steel shall be cleaned with soap and water and dried with a non-abrasive su	

CLIENT		ARCHITECT		STRUCTURAL ENGINEER		CIVIL ENGINEER		MECHANICAL ENGINEER		PLUMBING ENGINEER		ELECTRICAL ENGINEER	
Paradigm Financial Advisors, LLC		TRI Architects		Stock & Associates		DESIGNBUILD		DESIGNBUILD		DESIGNBUILD		DESIGNBUILD	
DWG BY		TRJ PROJECT NO.		18-009		SHEET NO.		A007		SPECIFICATIONS			



DOOR SCHEDULE										FRAMES					
DOORS															
NO.	TYPE	MAT'L	Width	HEIGHT	THICKNESS	HARDWARE REQUIRED	LOCK TYPE	LAB.	NOTES	TYPE	MAT'L	HEAD	JAMBS	SILL	LAB.
100	A	AL	PAIR 3'-0"	8'-0"	MANF.	2, 3, 4, 5, 8, 13				11/A010	AL			20/A010	
101	B	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 10, 14, 17		60		1	HM	19/A010	19/A010		
102	A	AL	3'-0"	8'-0"	MANF.	2, 3, 4, 5, 6, 8, 13				16/A010	AL			20/A010	
102A	B	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 10, 12, 14, 17		60		1	HM	19/A010	19/A010		
130D	B		3'-0"	8'-0"											
130E	B		6'-0"	8'-0"											
130F	B		6'-0"	8'-0"											
201	B	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 10, 14		60		1	HM	19/A010	19/A010		
202	B	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 10, 14		60		1	HM	19/A010	19/A010		
203	C	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 10, 14, 15				1	HM	19/A010	19/A010		
204	C	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 10, 14, 15				1	HM	19/A010	19/A010		
205	C	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 9, 10, 16	S			1	HM	19/A010	19/A010		
206	C	WD	3'-0"	8'-0"	1 3/4"	1, 2, 7, 9, 10, 11	PA			1	HM	19/A010	19/A010		
DOOR HARDWARE															
PRODUCT			MANUF.		MODEL NUMBER		DESCRIPTION/SPEC.								
1	1 1/2 PAIR HINGES (EA. LEAF)		HAGER		BB1279 INTERIOR / BB1191 EXTERIOR		NON RISING PINS TO BE USED ON OUTSWINGING EXTERIOR DOORS								
2	DOOR CLOSER (EA. LEAF)		NORTON		7700 SERIES		PARALLEL ARM @ EXT. DOORS, REGULAR ARM @ INTERIOR DOORS								
3	THRESHOLDS		NGP		8425		W/ THERMAL BREAK								
4	DOOR SWEEPS		NGP		200NA		--								
5	WEATHER-STRIPPING		STOREFRONT MFR.				--								
6	DRIP STRIP		NGP		16A		--								
7	KICKPLATE		ROCKWOOD		K1050 10" x 34" - US32D		FOUR SIDES BEVELED								
8	EXIT DEVICE		VON DUPRIN		99L x 17		--								
9	DOOR STOP		ROCKWOOD		409		--								
10	SILENCERS		ROCKWOOD		609		--								
11	PASSAGE LATCHSET		SCHLAGE		ND105 x SPA		--								
12	EXIT DEVICE		VON DUPRIN		99L x 17 - F		--								
13	CYLINDER						6 PIN REMOVABLE CORE								
14	FLOOR STOP		ROCKWOOD		442		--								
15	PUSH / PULL		ROCKWOOD		107 x 70C		FOUR SIDES BEVELED								
16	STOREROOM LOCKSET		SCHLAGE		ND80PD x SPA		--								
17	EXIT DEVICE		VON DUPRIN		99L - BE17 - F		--								
NOTE: 1. HARDWARE PROVIDED FOR BASIS OF DESIGN ONLY. CONTRACTOR ALLOWED TO SUBMIT ALTERNATES OF EQUAL QUALITY. 2. ALL DOOR HARDWARE TO BE US200, US320 OR 620 FINISH 3. ALUMINUM ENTRY DOOR MANUFACTURER TO PROVIDE OFFSET PIVOTS (TOP, INTER., & BOTTOM), WEATHERSTRIPPING & STANDARD OFFSET DOOR PULLS SELECTED BY ARCHITECT. COORD. ALL OTHER HARDWARE SCHEDULED.															

TEMPERED GLASS

12" MIN.

A

MEDIUM STYLE ALUM/GLASS DOOR

6"x35" VIEW LITE, 1/4" TEMPERED GLASS

B

SOLID CORE WOOD DOOR

C

SOLID CORE WOOD DOOR

1

2"

2"

LOCK TYPES:

PA - PASSAGE: BOTH LEVERS ALWAYS UNLOCKED.

PR - PRIVACY: PUSH-BUTTON LOCKING. CAN BE OPENED FROM OUTSIDE WITH SMALL SCREWDRIVER. TURNING INSIDE LEVER OR CLOSING DOOR RELEASES BUTTON.

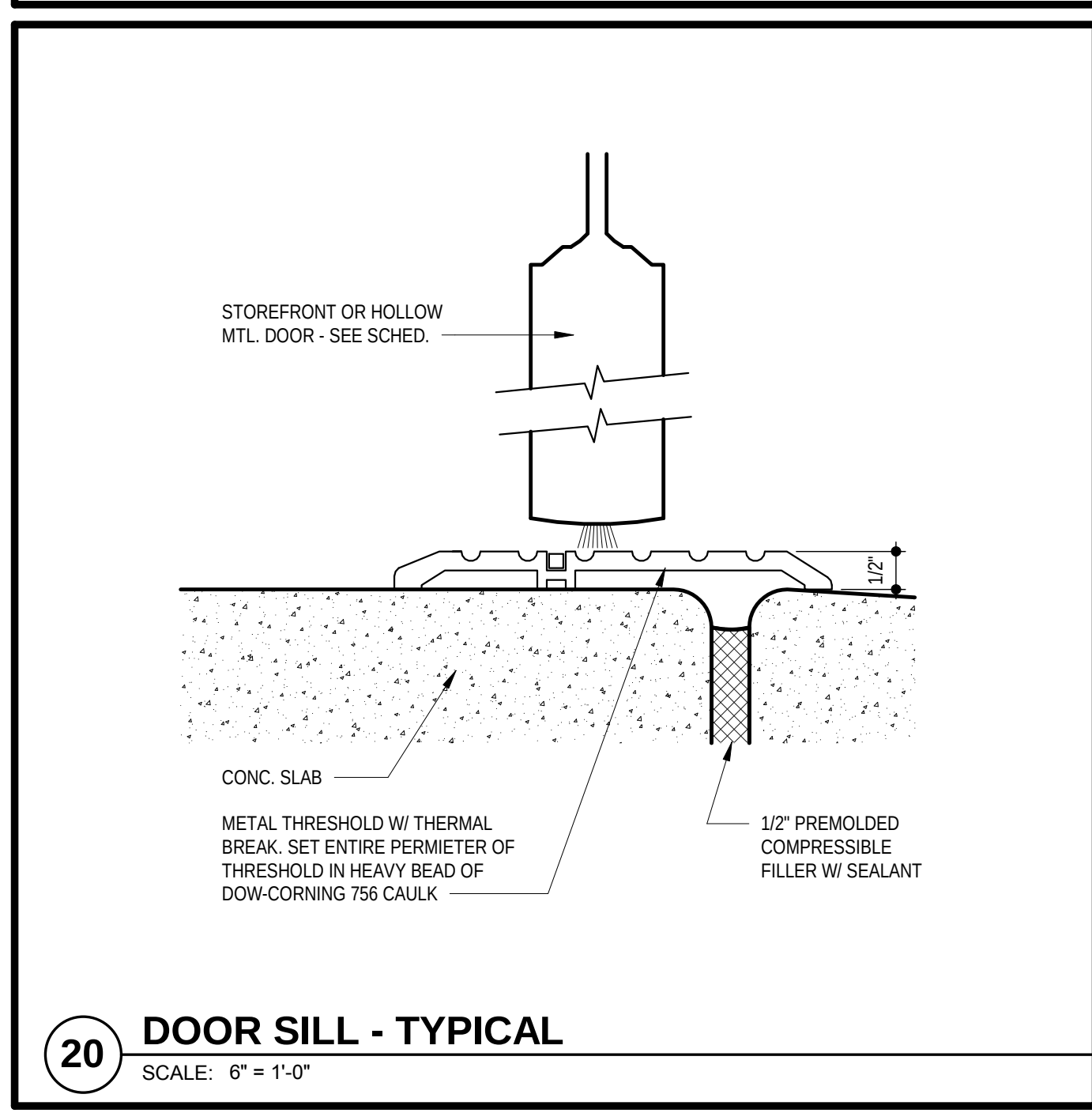
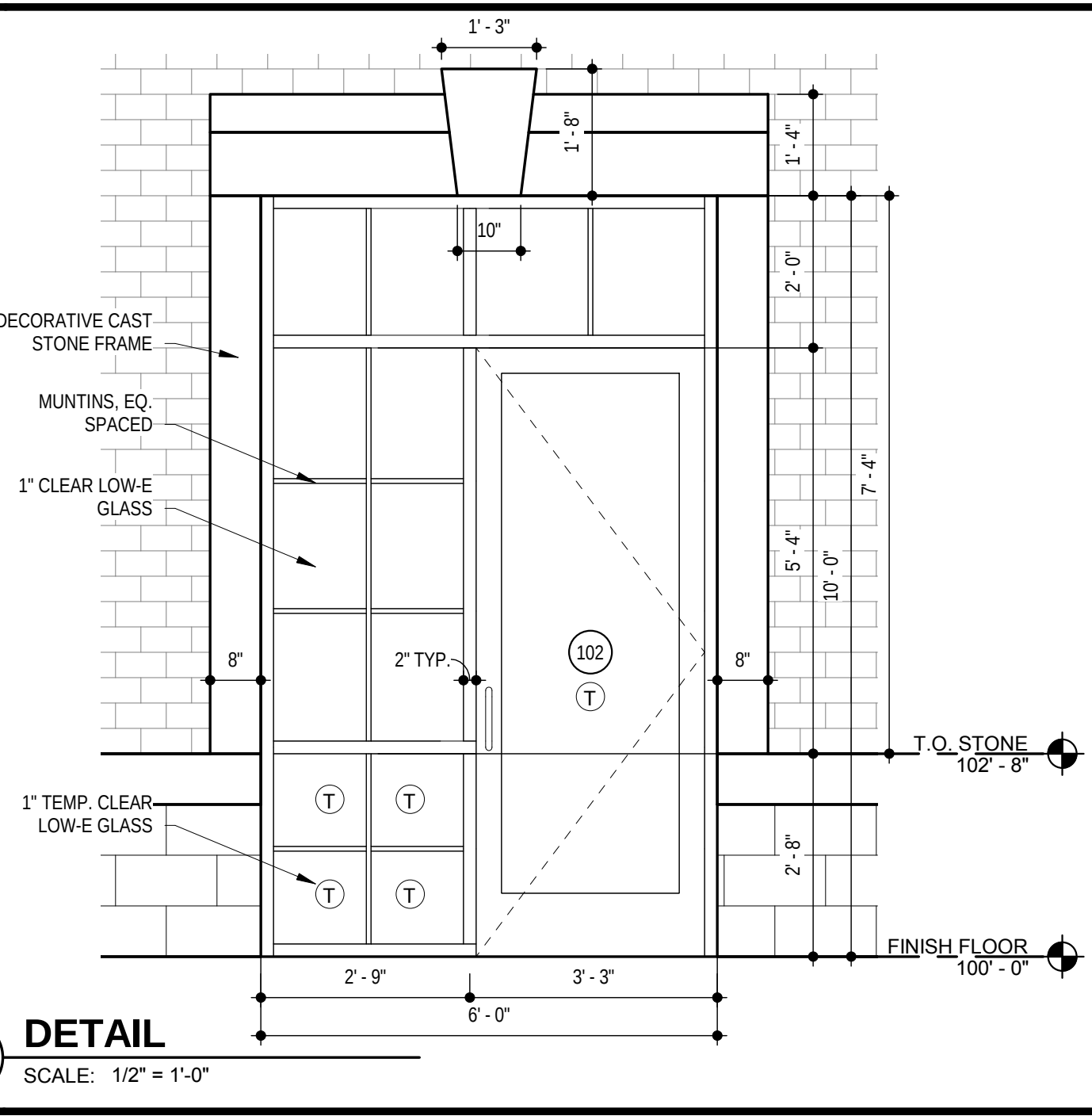
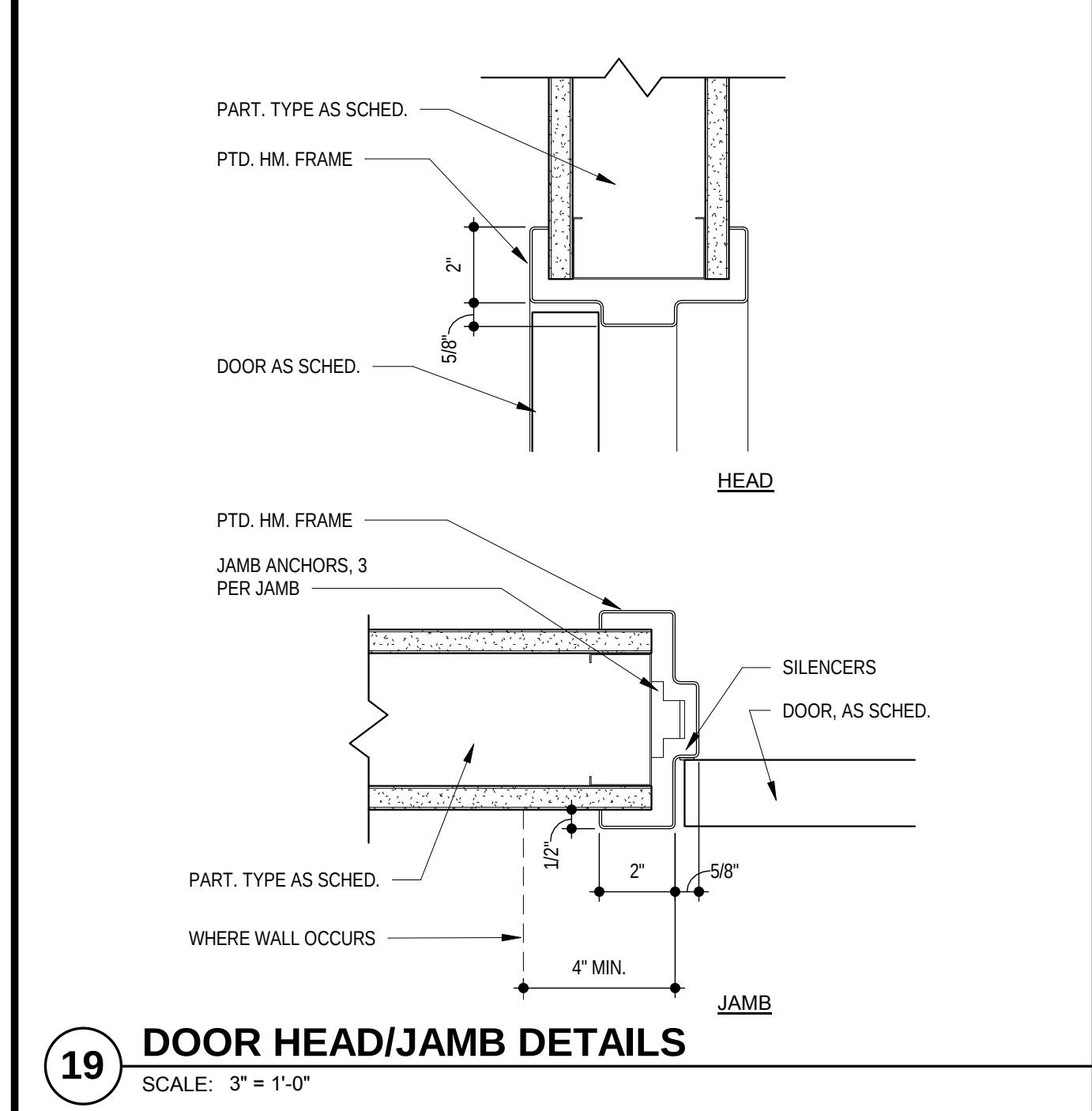
E - ENTRY: UNLOCKED BY KEY FROM OUTSIDE WHEN OUTSIDE LEVER IS LOCKED BY KEY IN INSIDE LEVER. INSIDE LEVER IS ALWAYS UNLOCKED.

C - CLASSROOM: OUTSIDE LEVER LOCKED AND UNLOCKED BY KEY. INSIDE LEVER IS ALWAYS UNLOCKED.

O - OFFICE: PUSH-BUTTON LOCKING. PUSH-BUTTON LOCKS OUTSIDE LEVER UNTIL UNLOCKED WITH KEY OR BY ROTATING INSIDE LEVER.

S - STOREROOM: OUTSIDE LEVER FIXED. ENTRANCE BY KEY ONLY. INSIDE LEVER ALWAYS UNLOCKED.

DOOR NOTES:
ALL EXTERIOR MAN AND OVERHEAD DOORS SHALL BE INSULATED (MIN. R-7).



CLIENT	ARCHITECT	STRUCTURAL ENGINEER	CIVIL ENGINEER	MECHANICAL ENGINEER	PLUMBING ENGINEER	ELECTRICAL ENGINEER
Paradigm Financial Advisors, LLC	TRI Architects	Aedifica Case Engineering	Stock & Associates	DESIGNBUILD	DESIGNBUILD	DESIGNBUILD

Paradigm Office Building
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ST. LOUIS COUNTY, MISSOURI

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Architects of the Possible

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DATE: 06-25-18

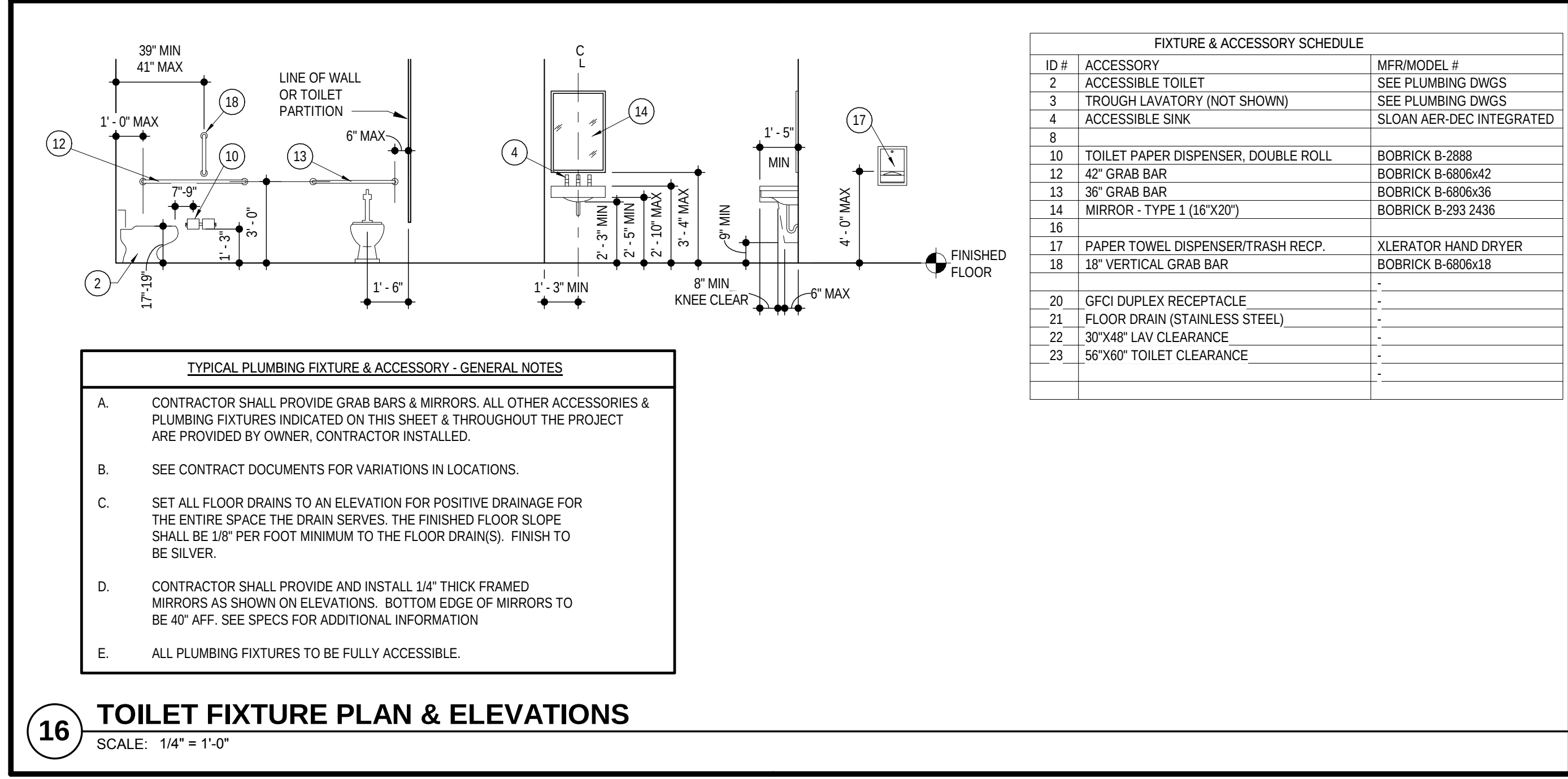
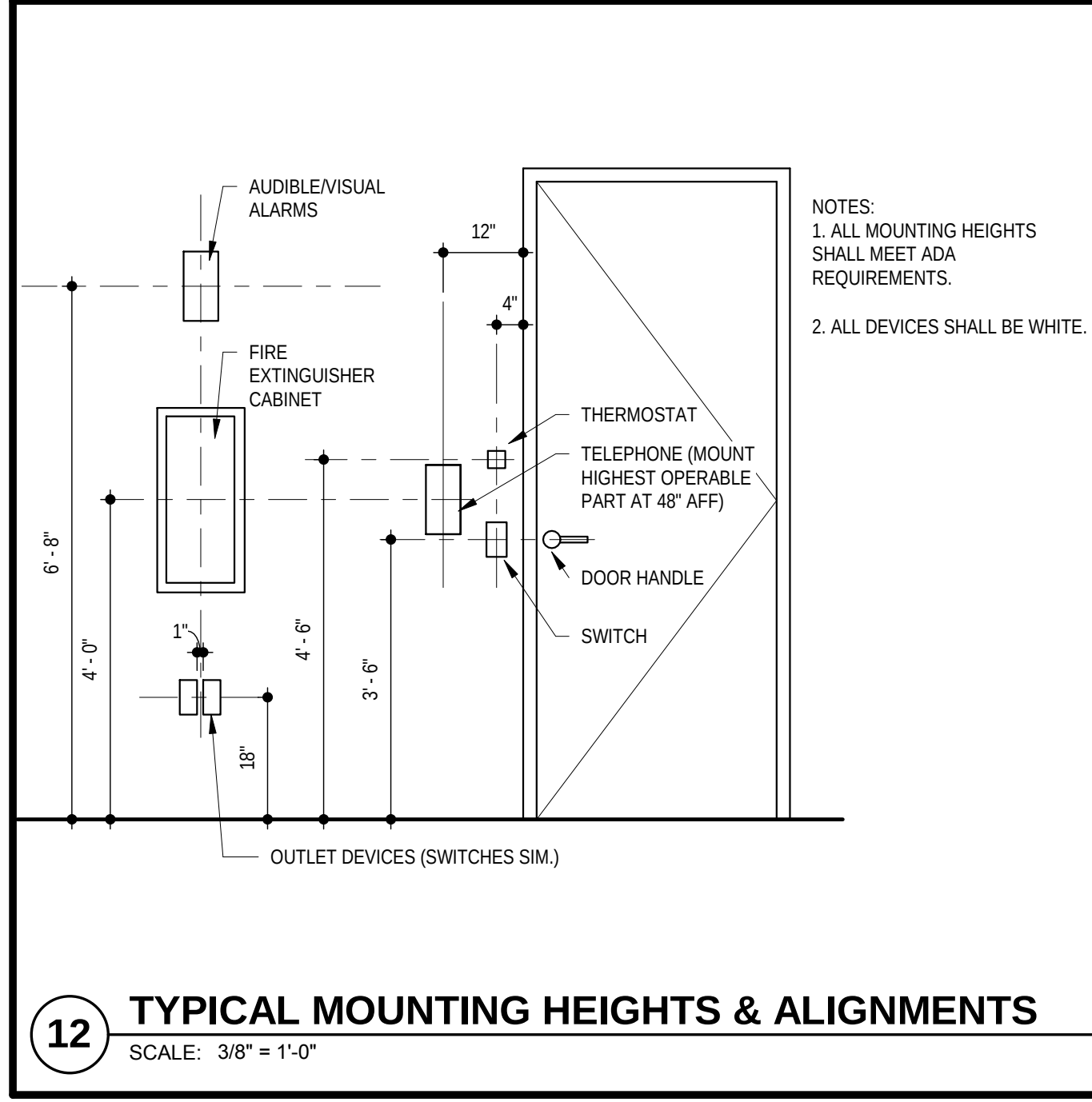
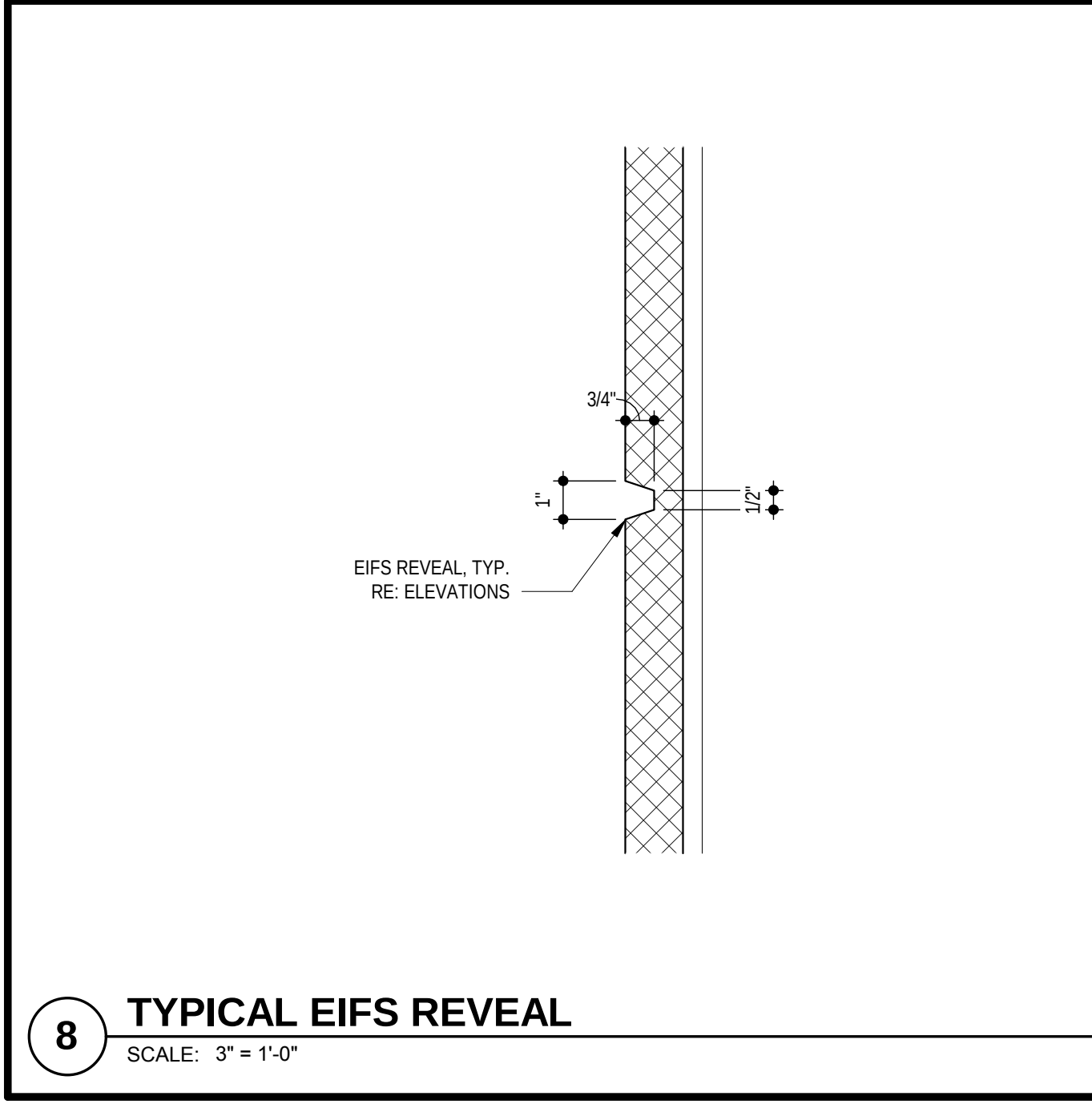
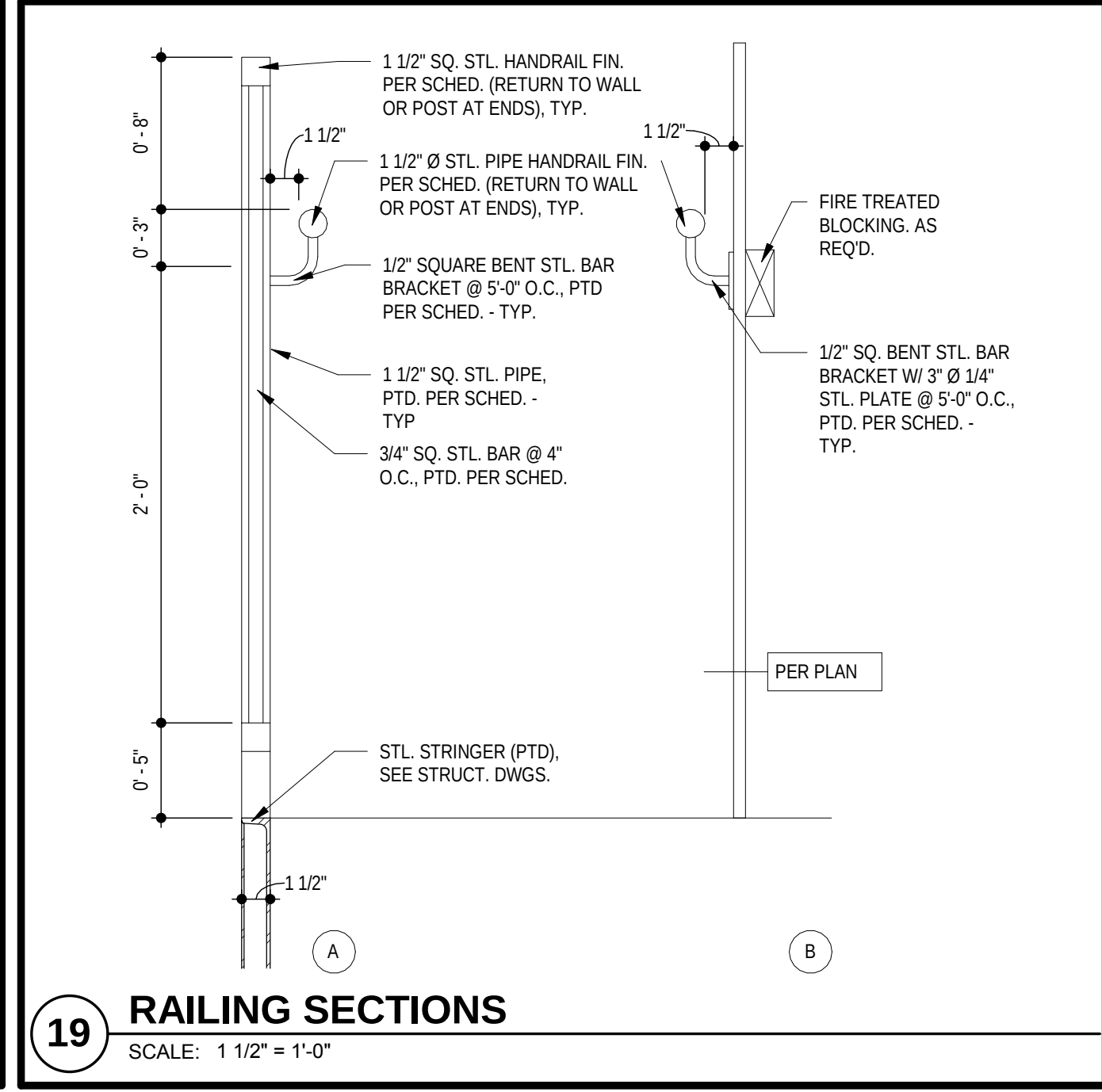
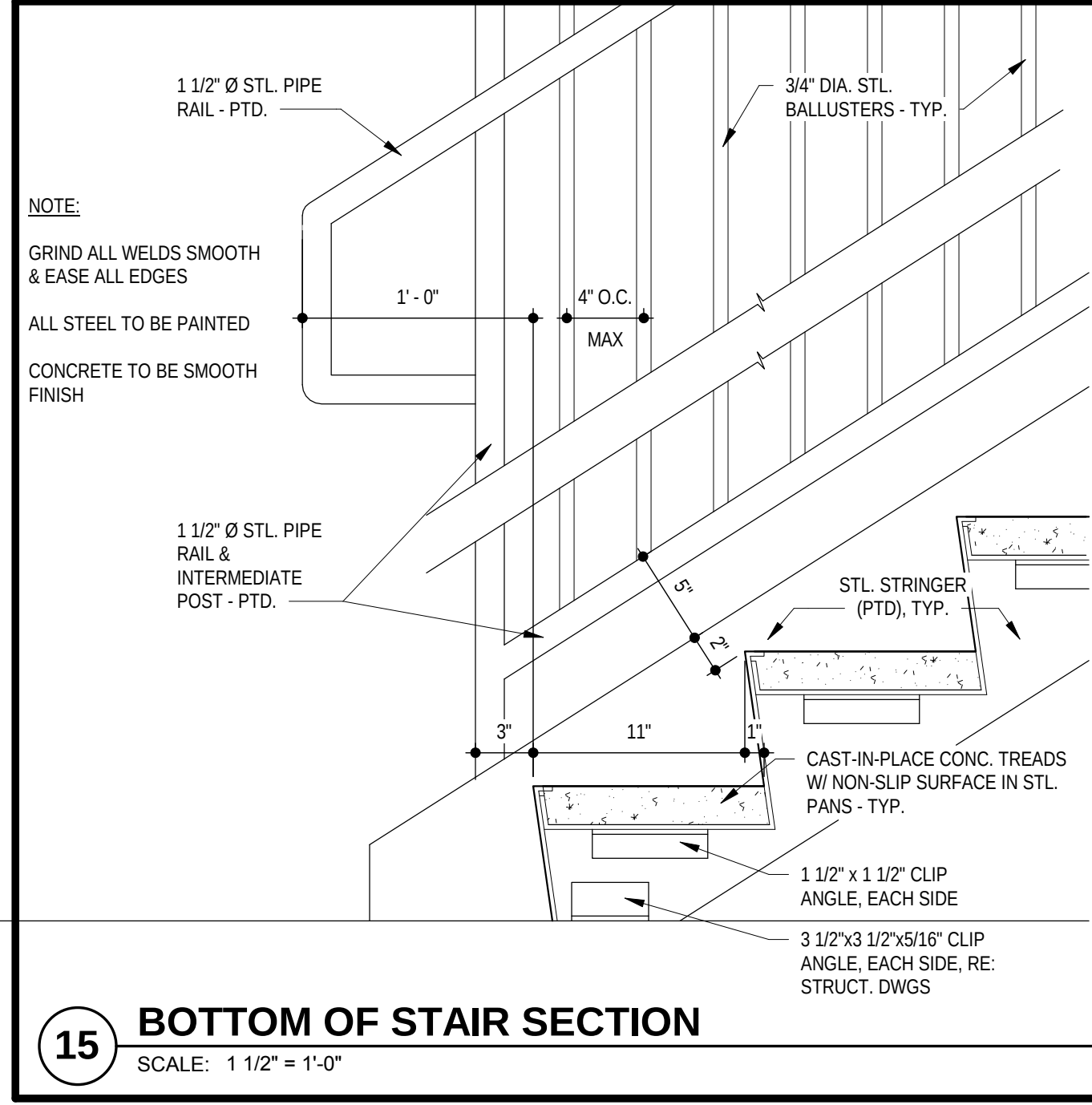
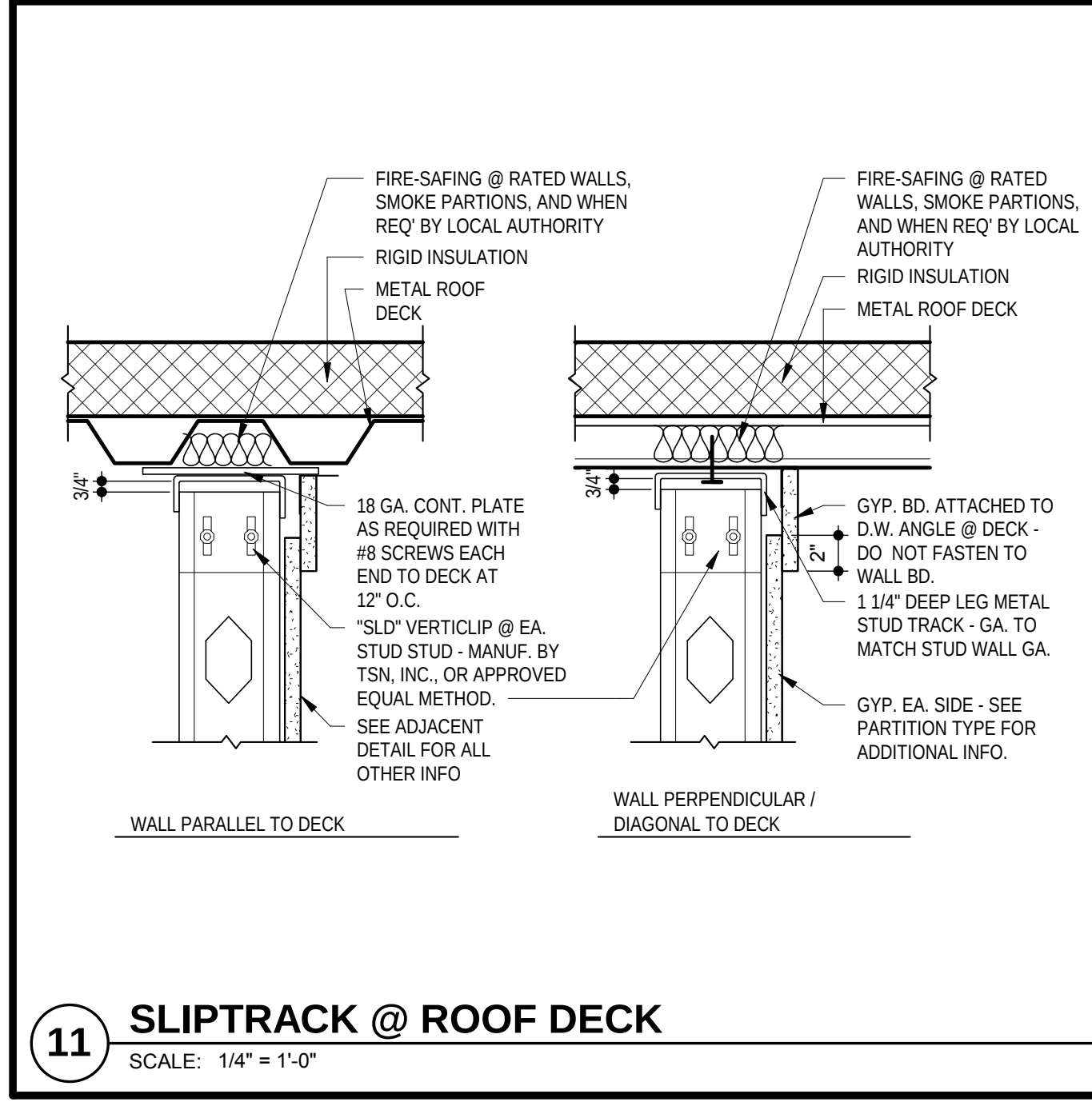
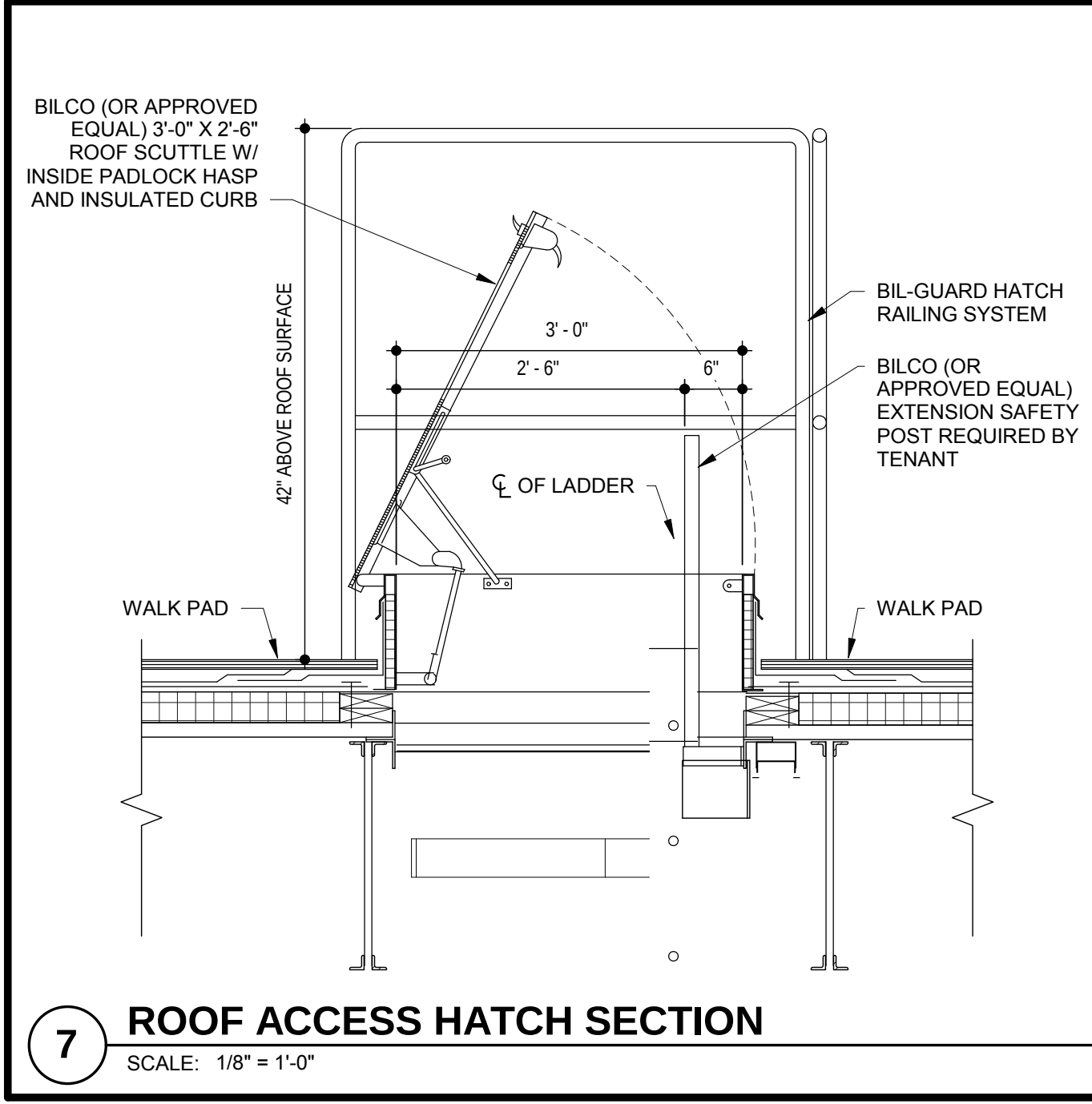
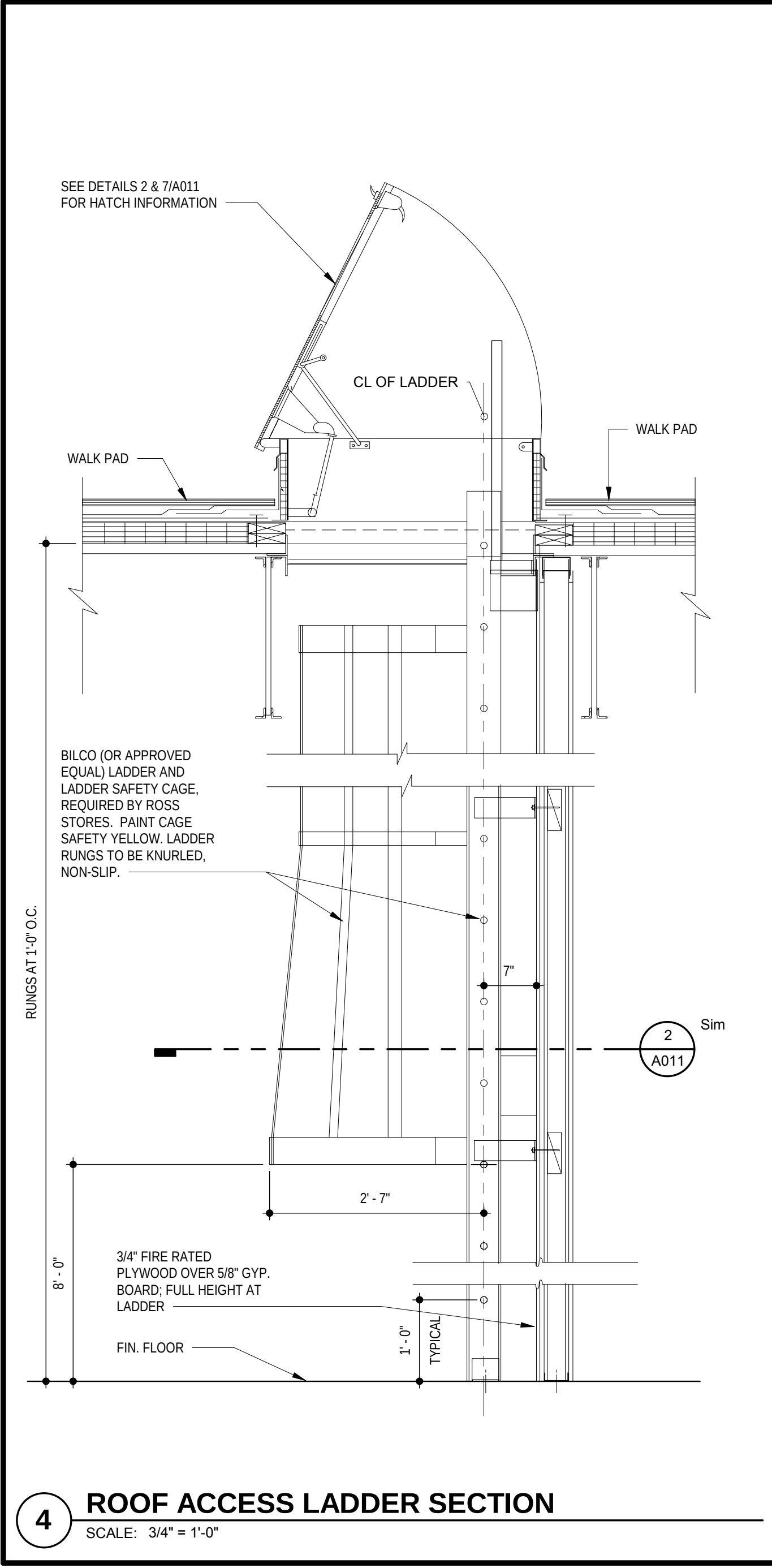
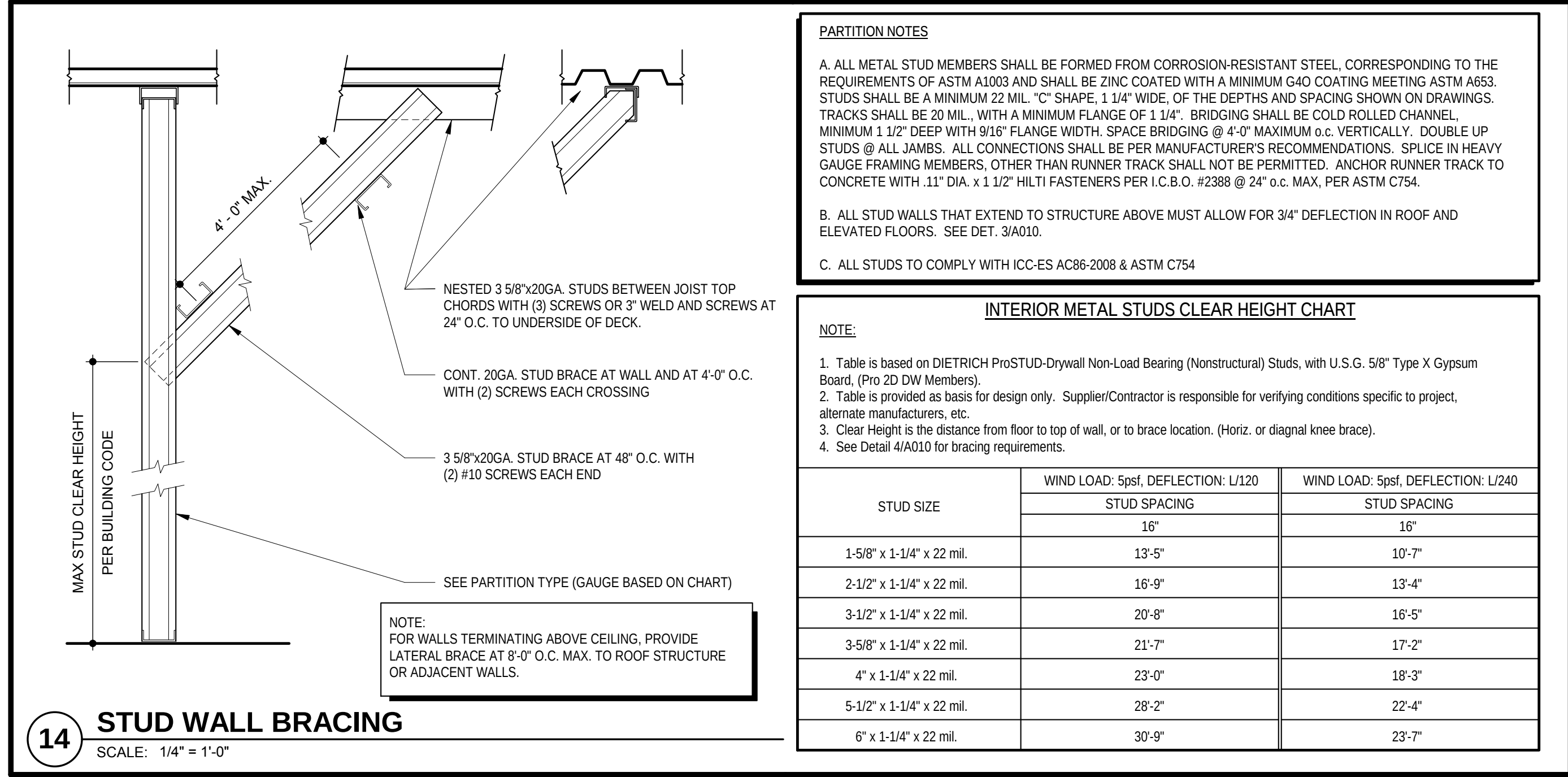
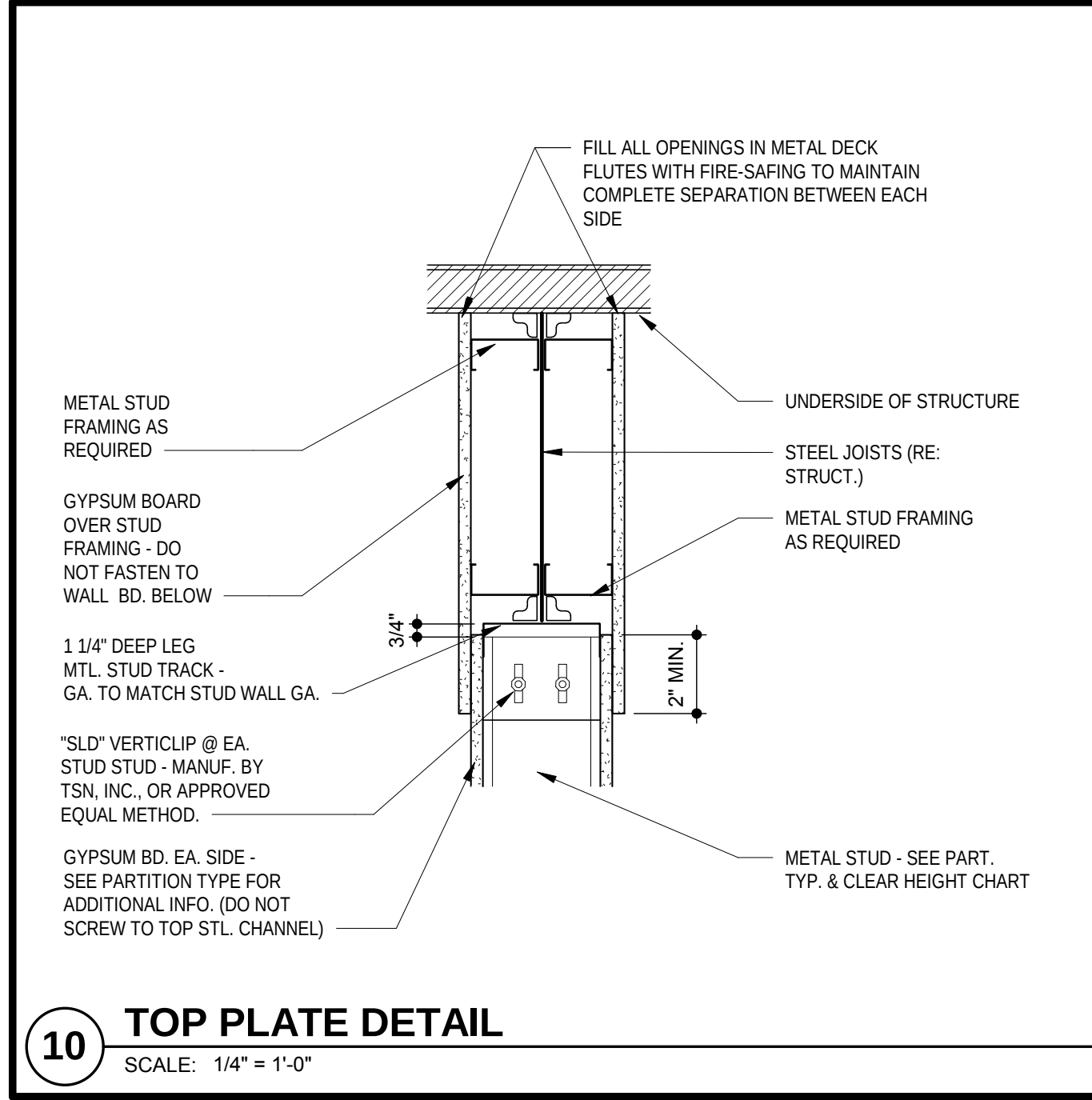
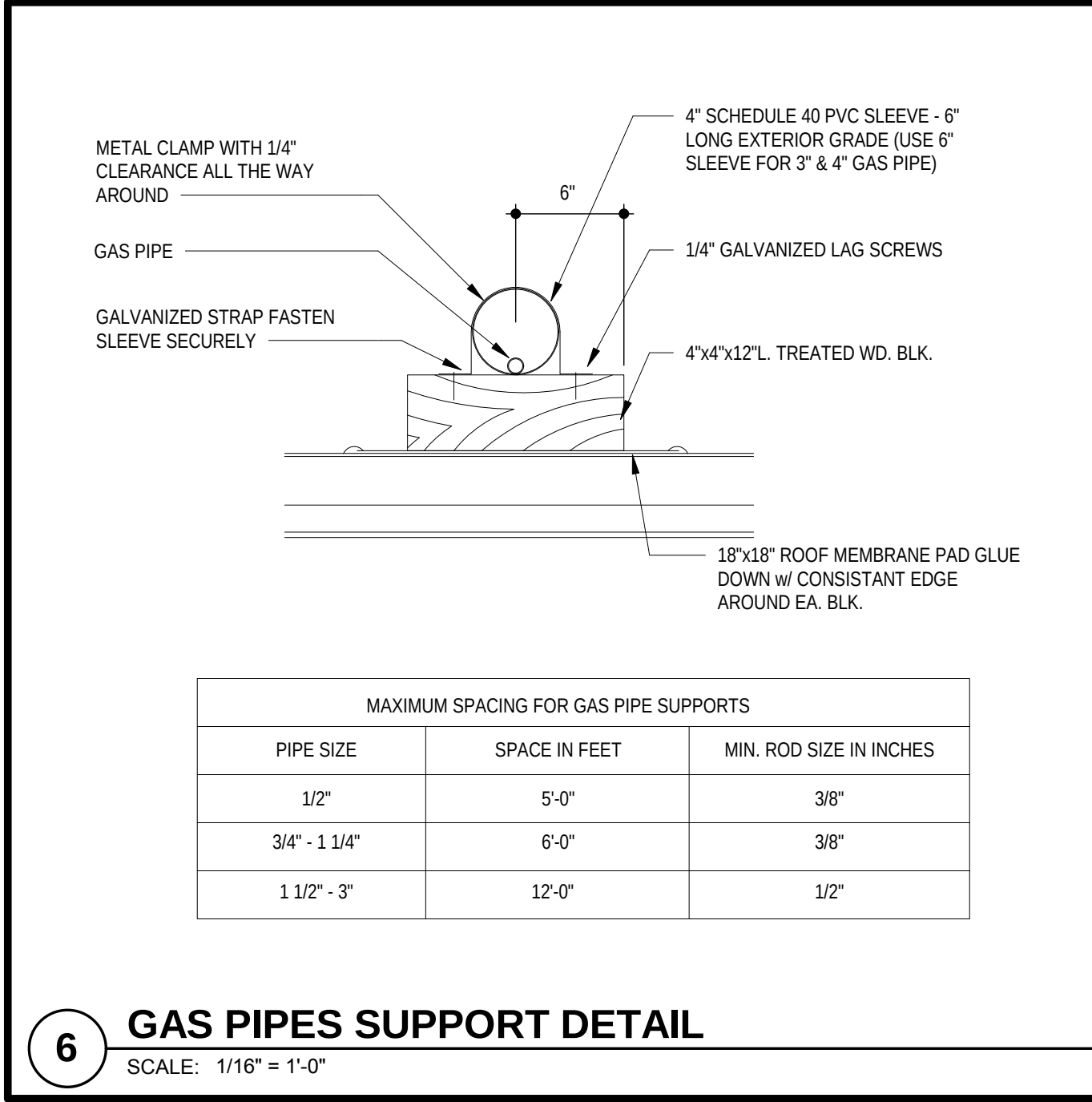
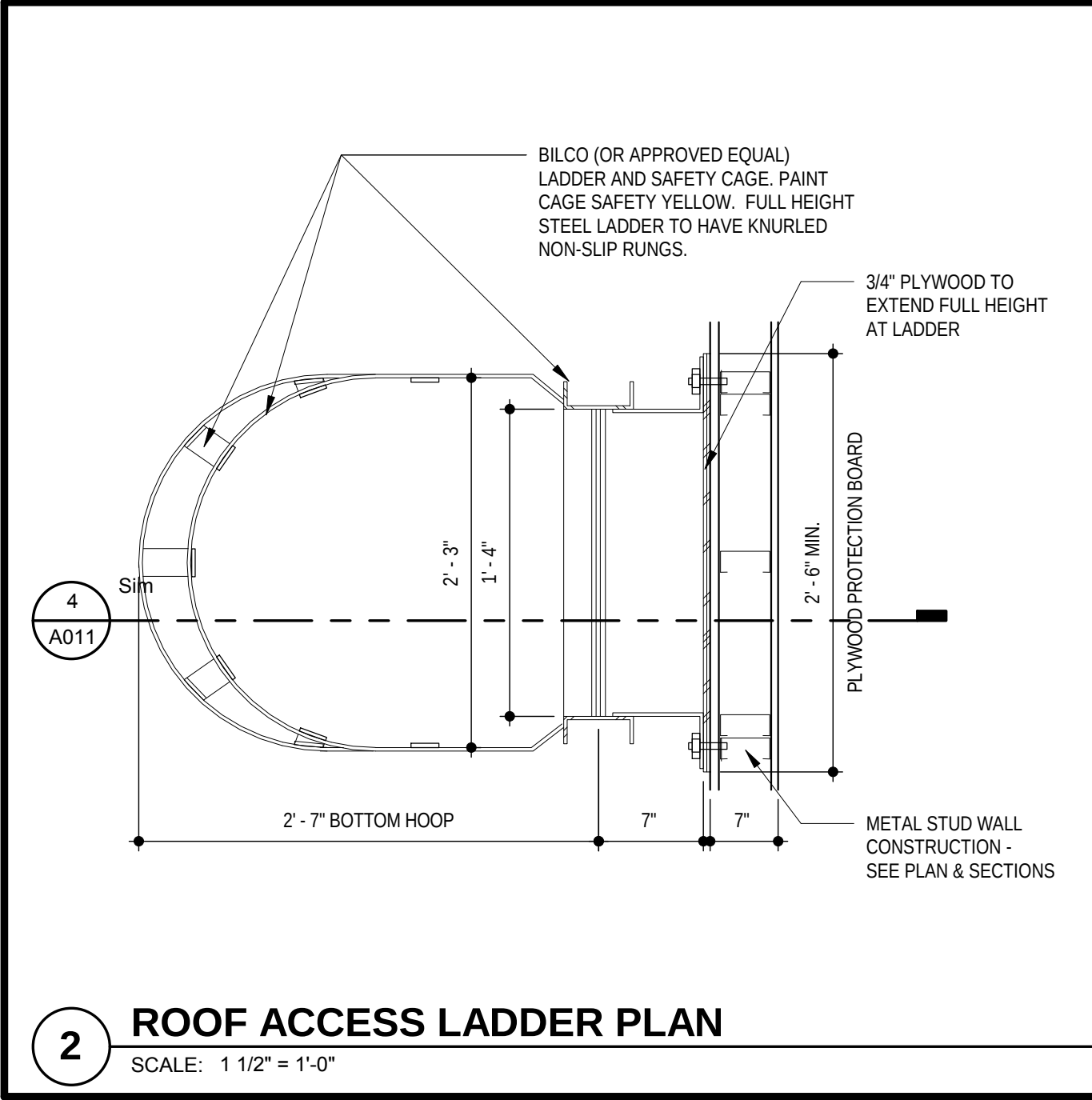
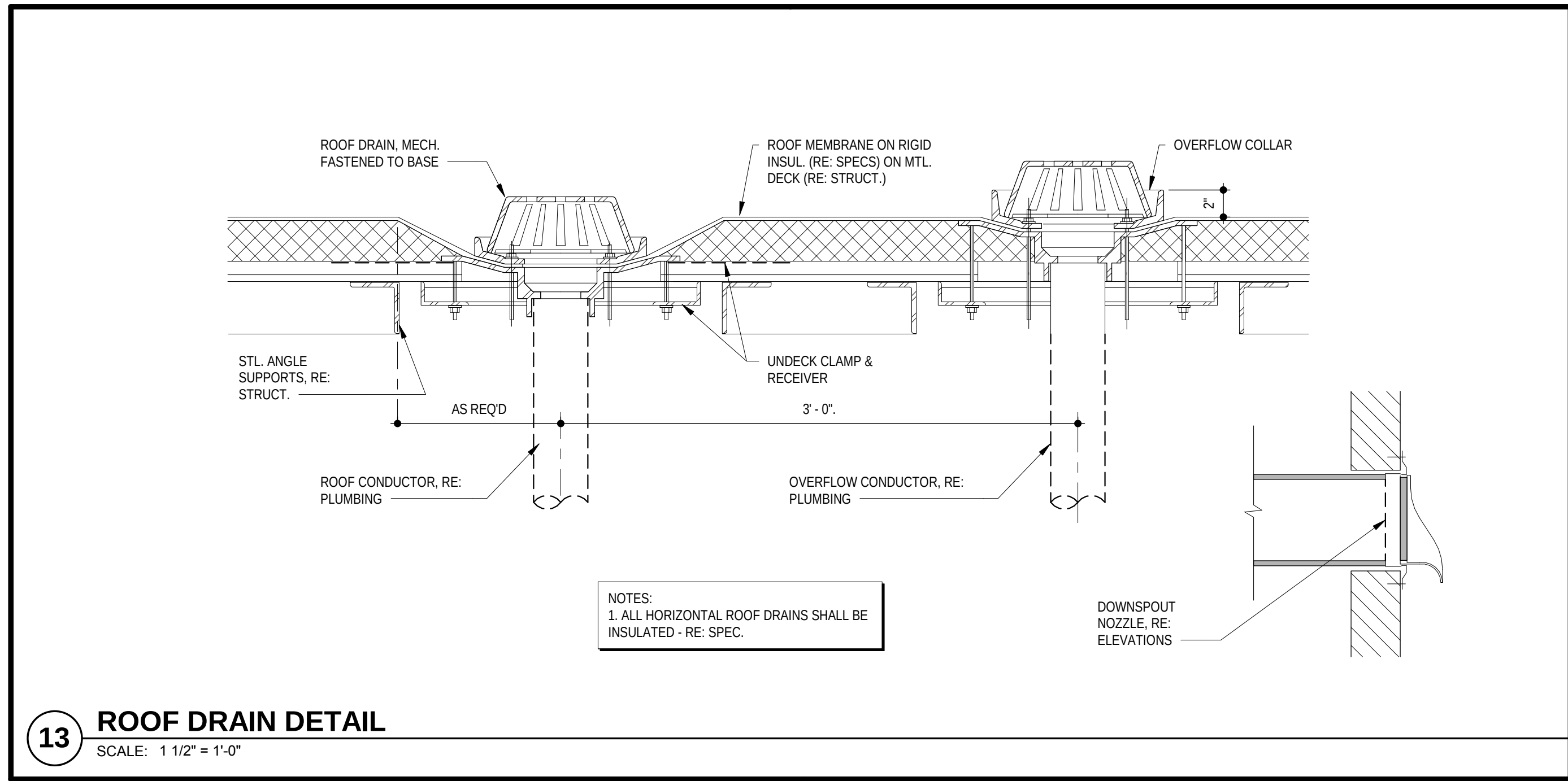
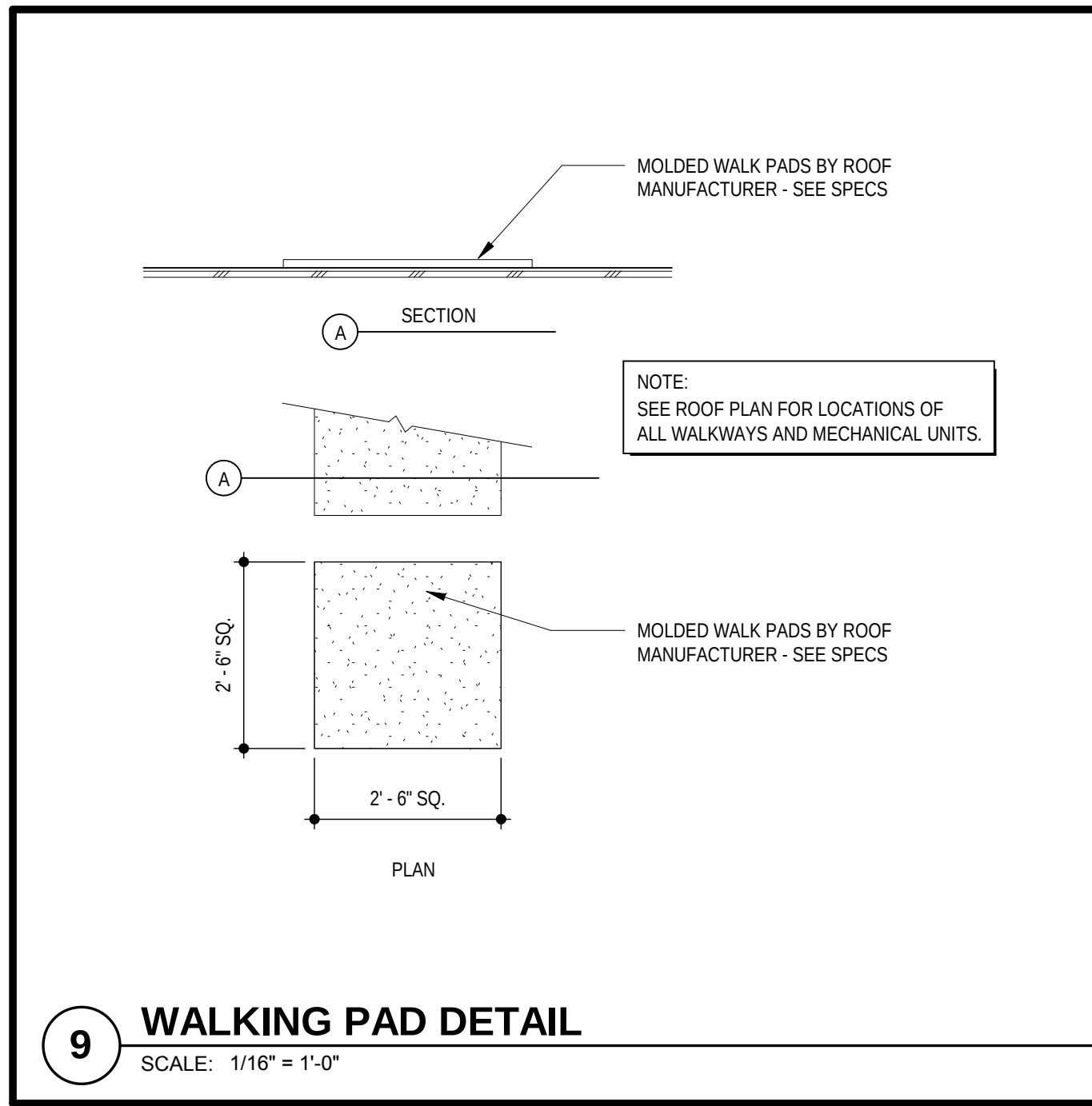
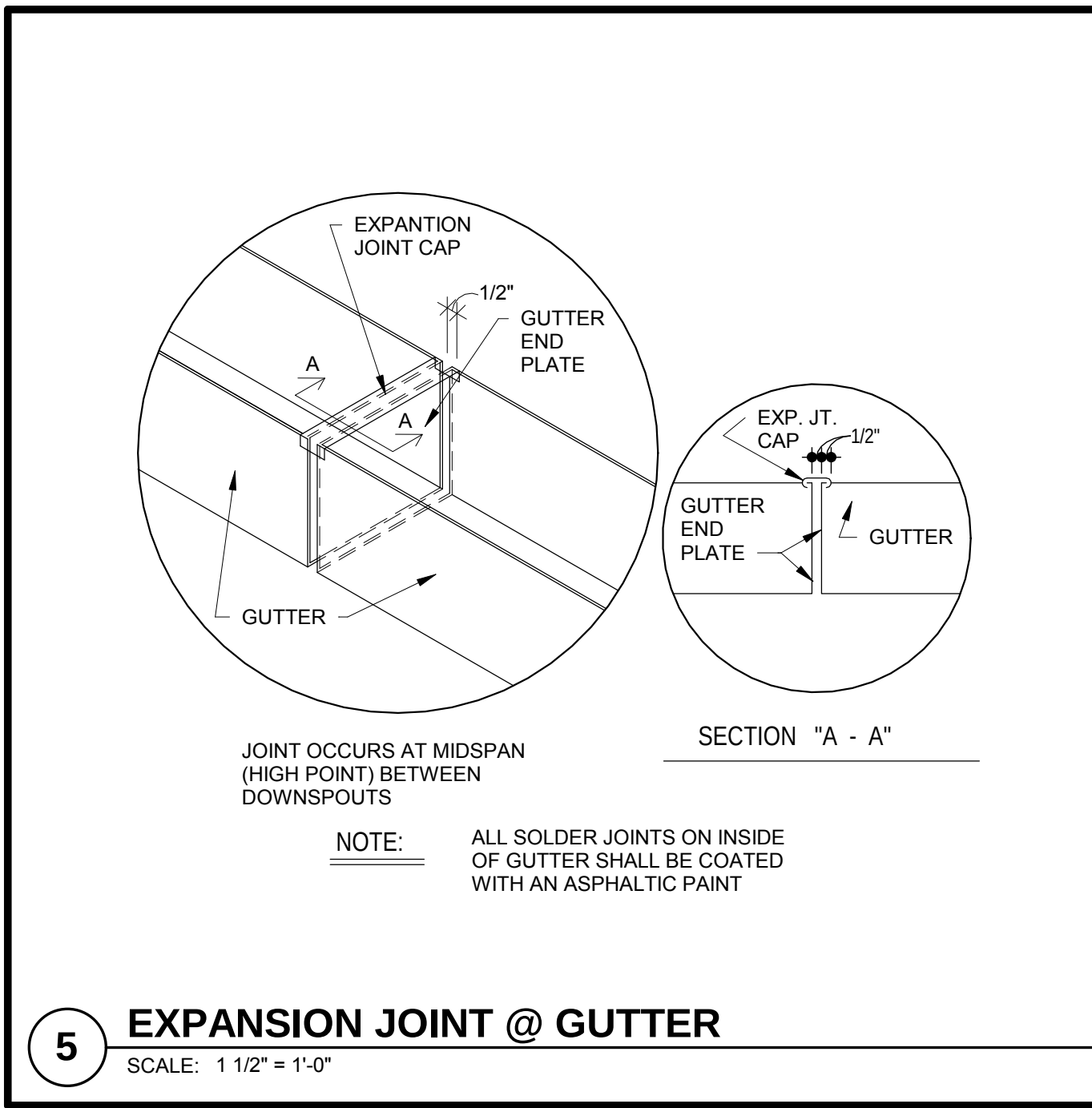
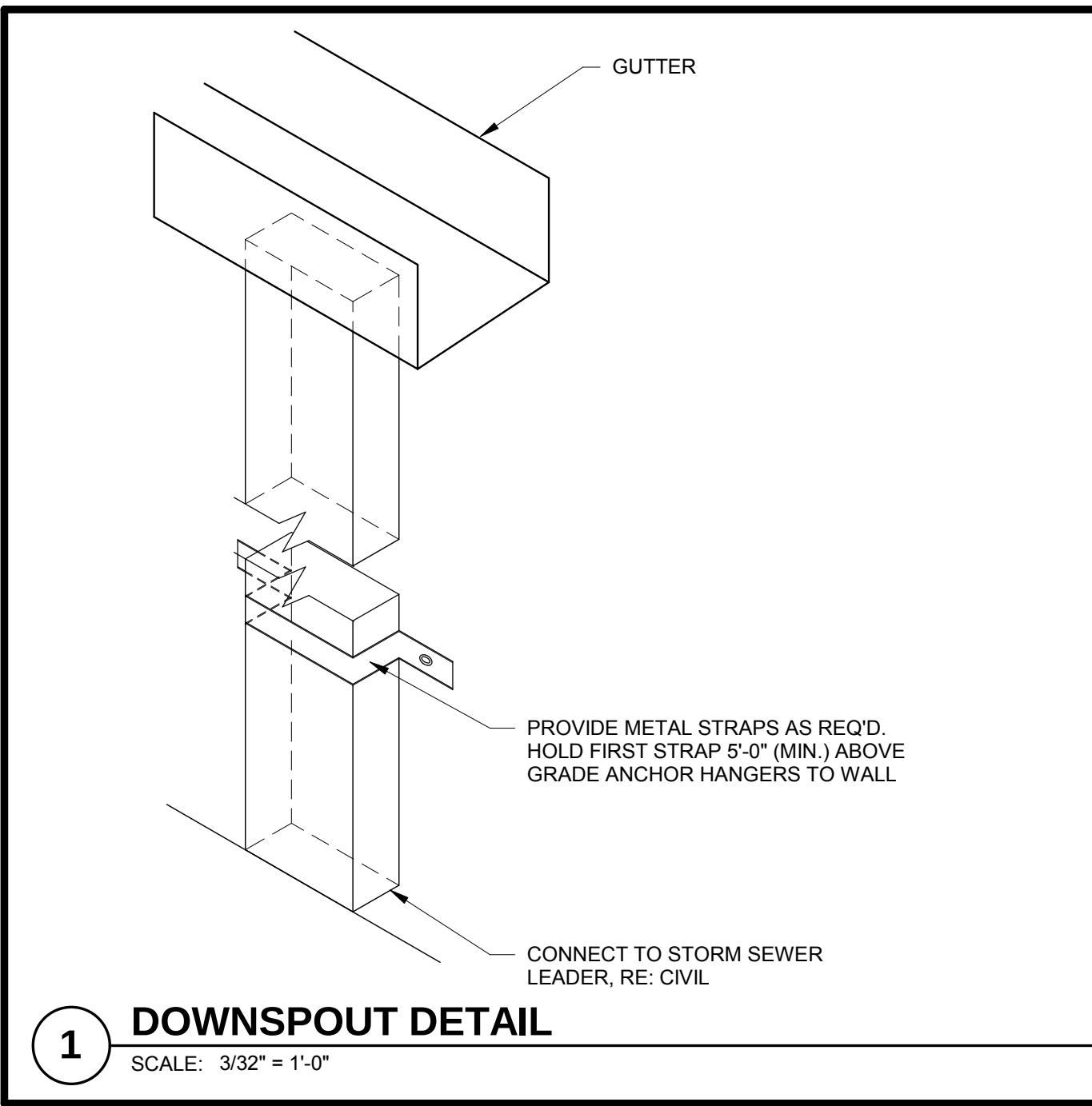
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TRi PROJECT NO. 18-009

SHEET NO.

A010
DOOR SCHEDULE & TYPICAL DETAILS



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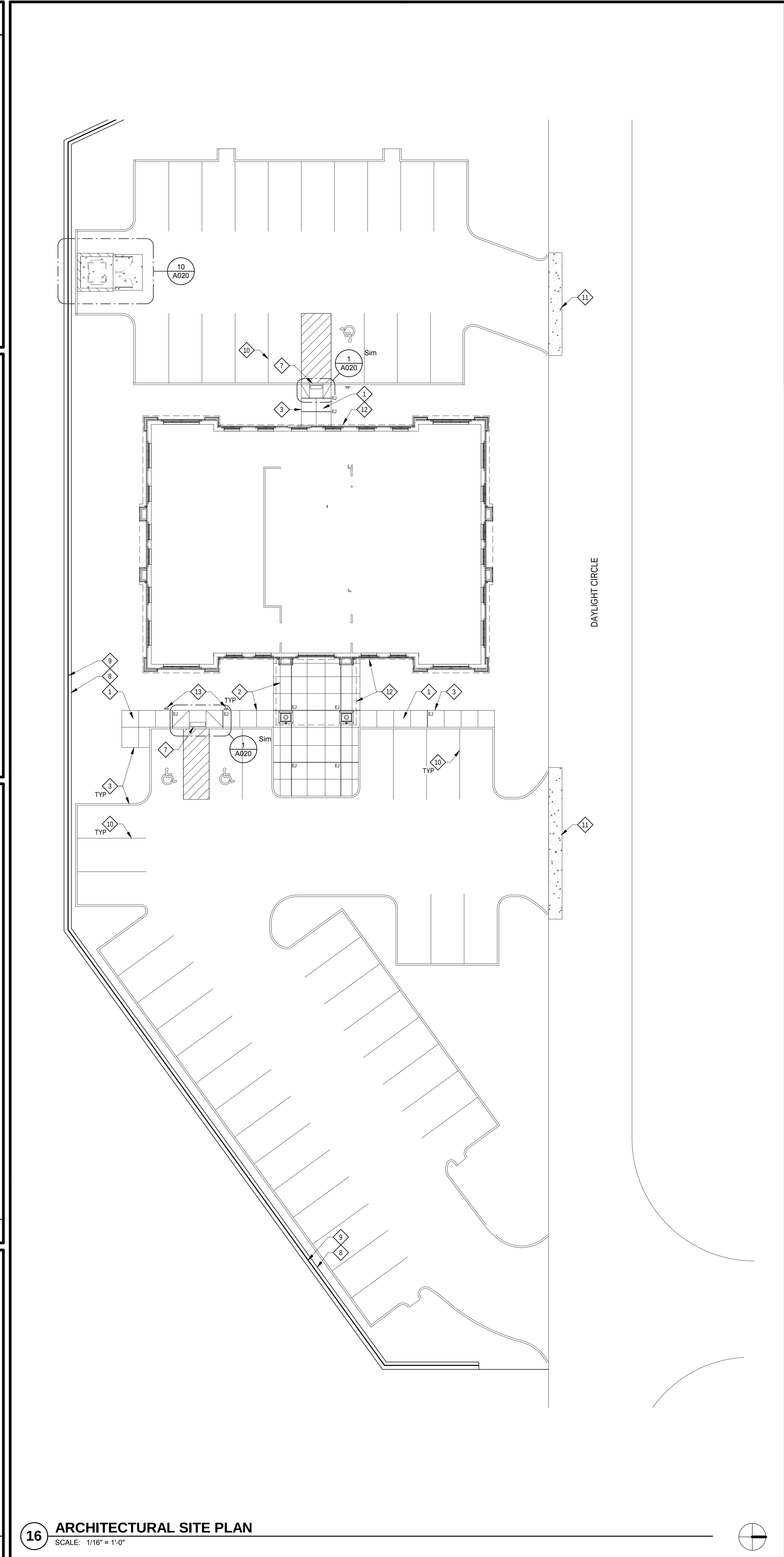
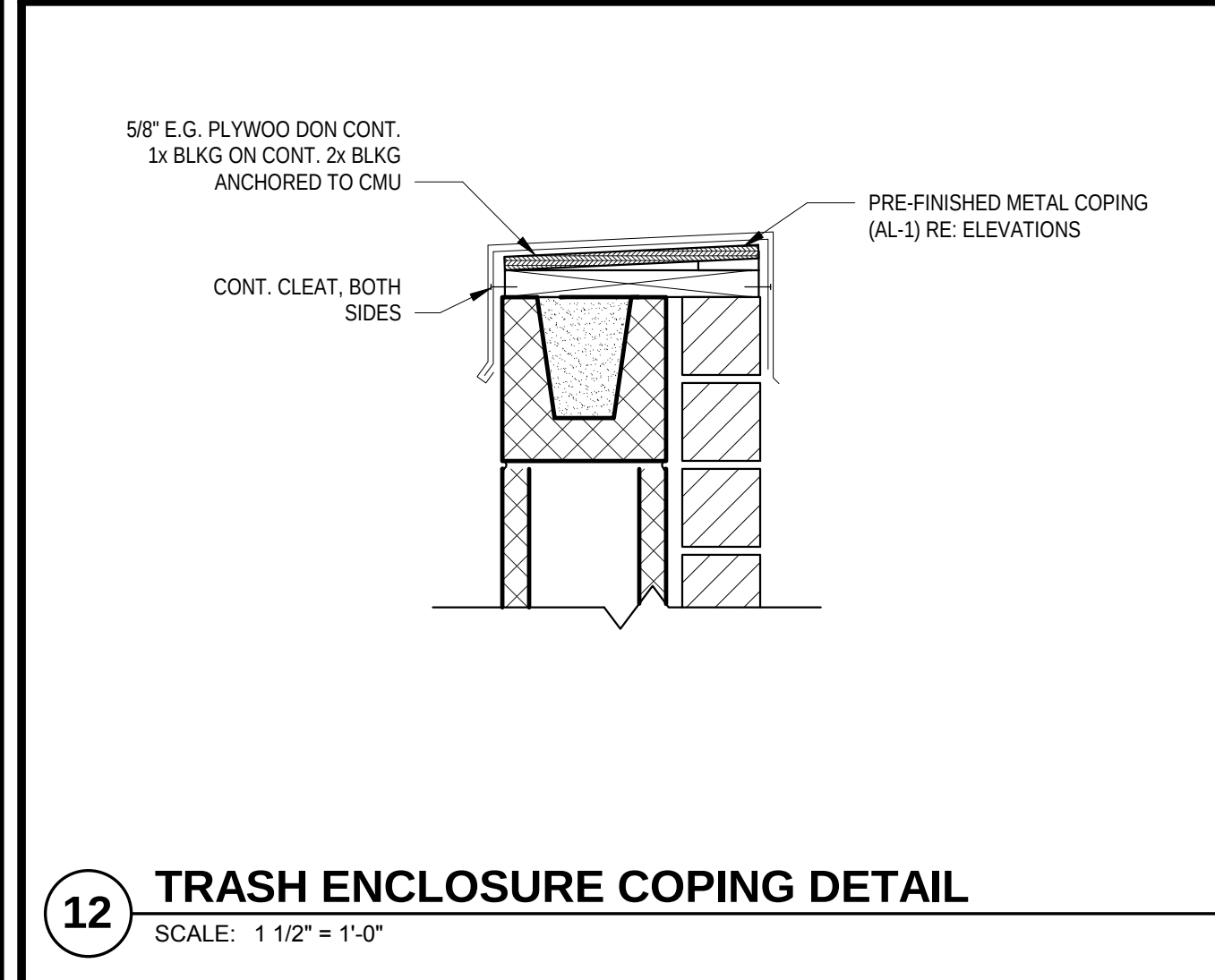
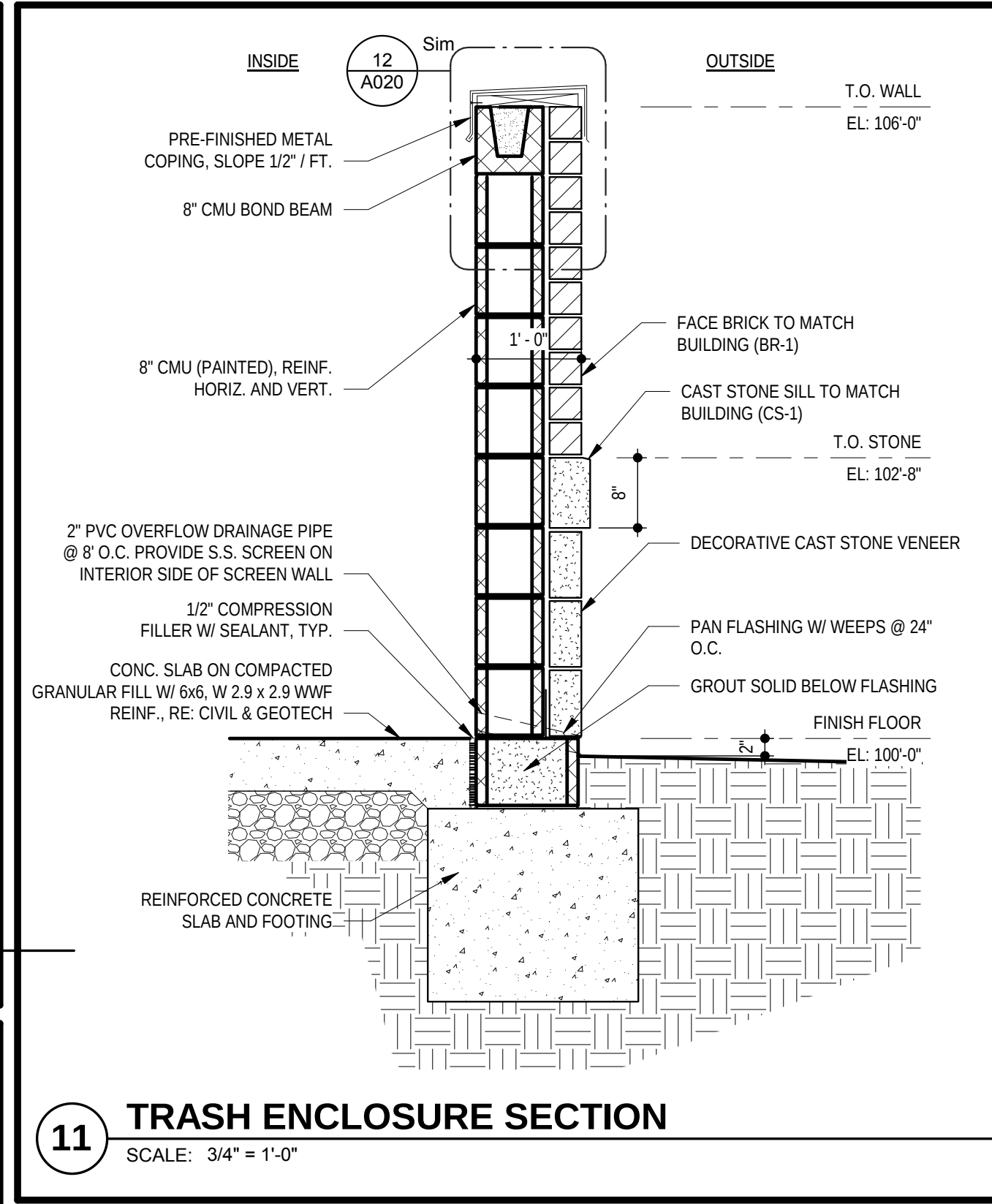
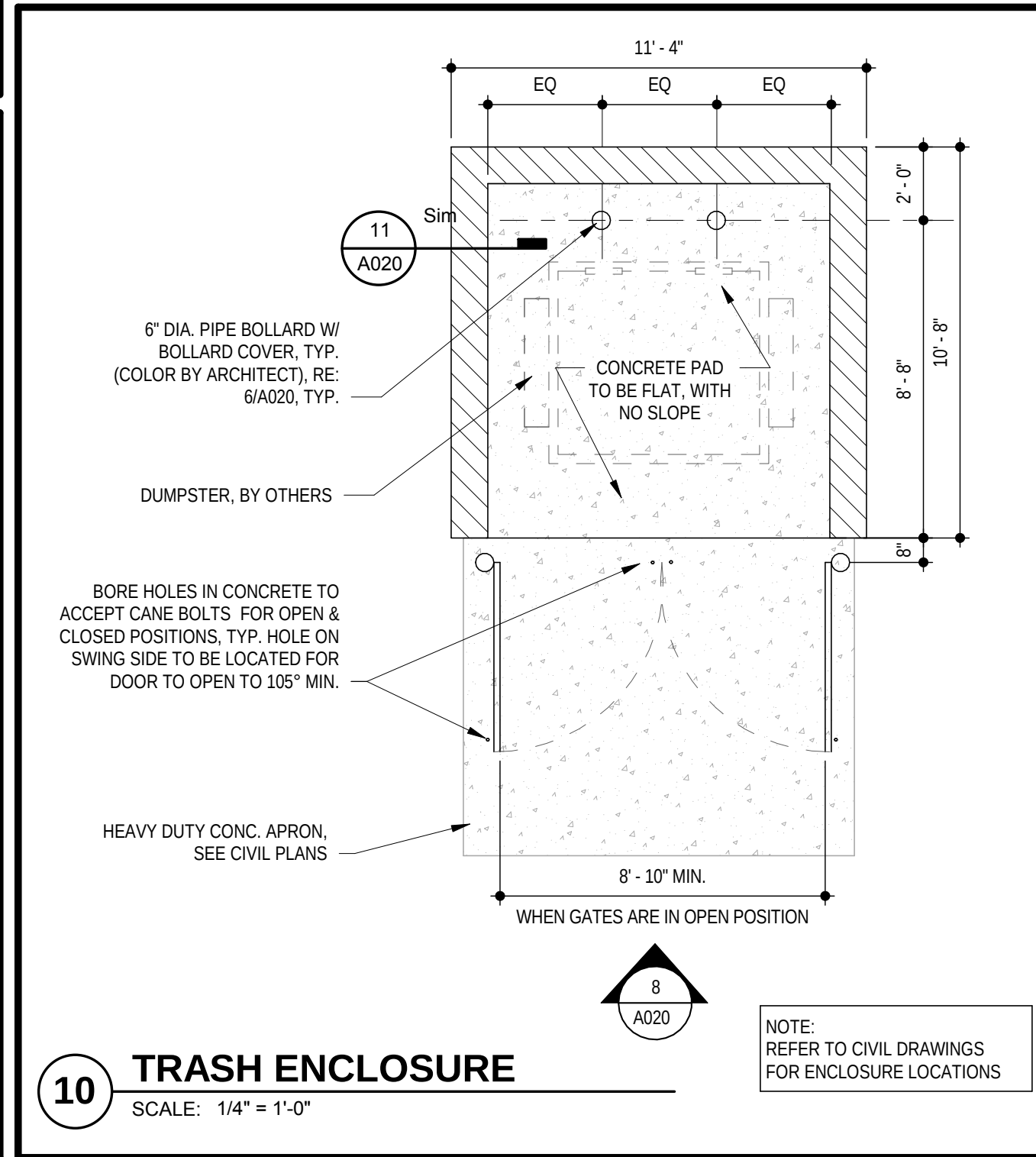
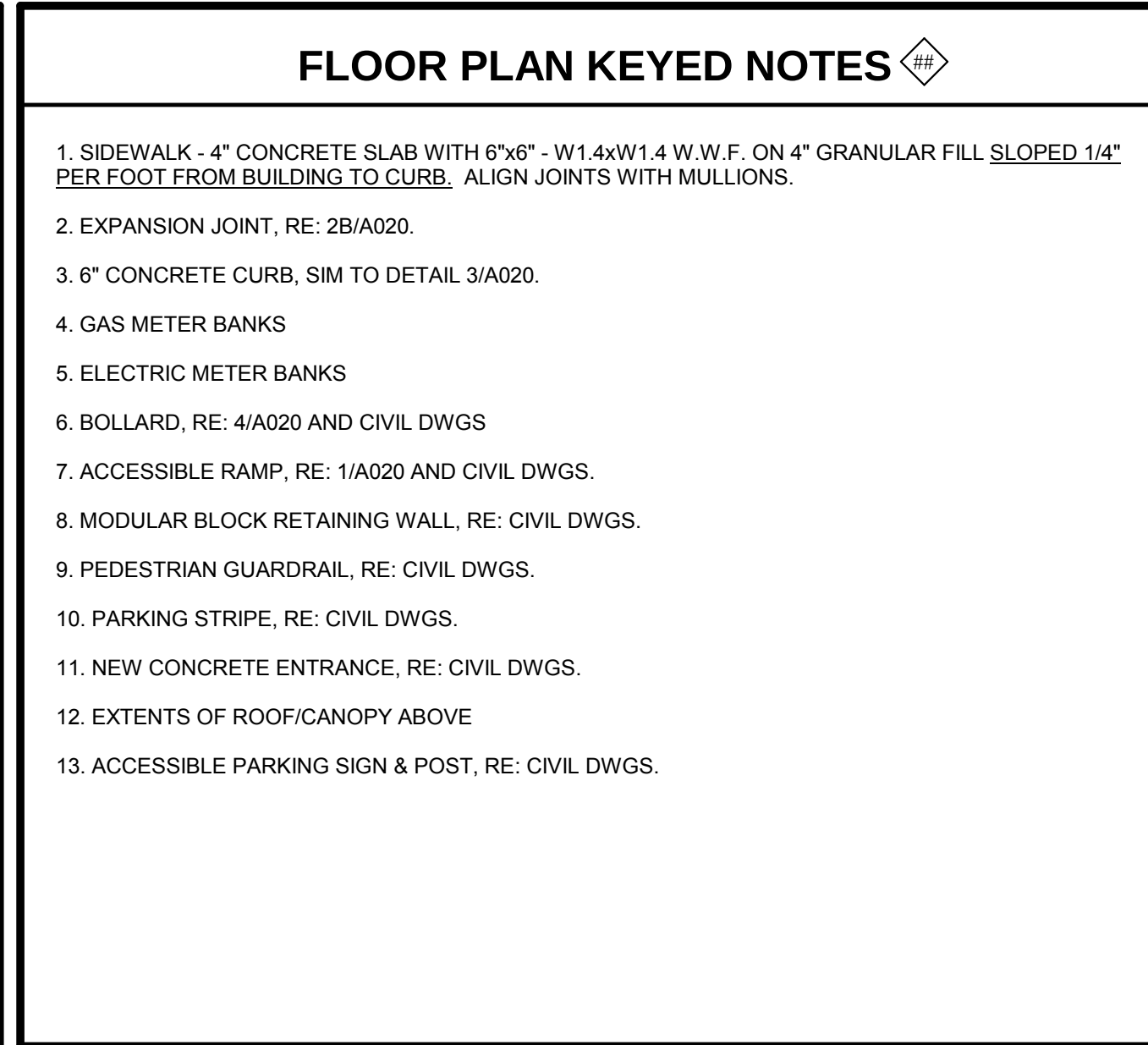
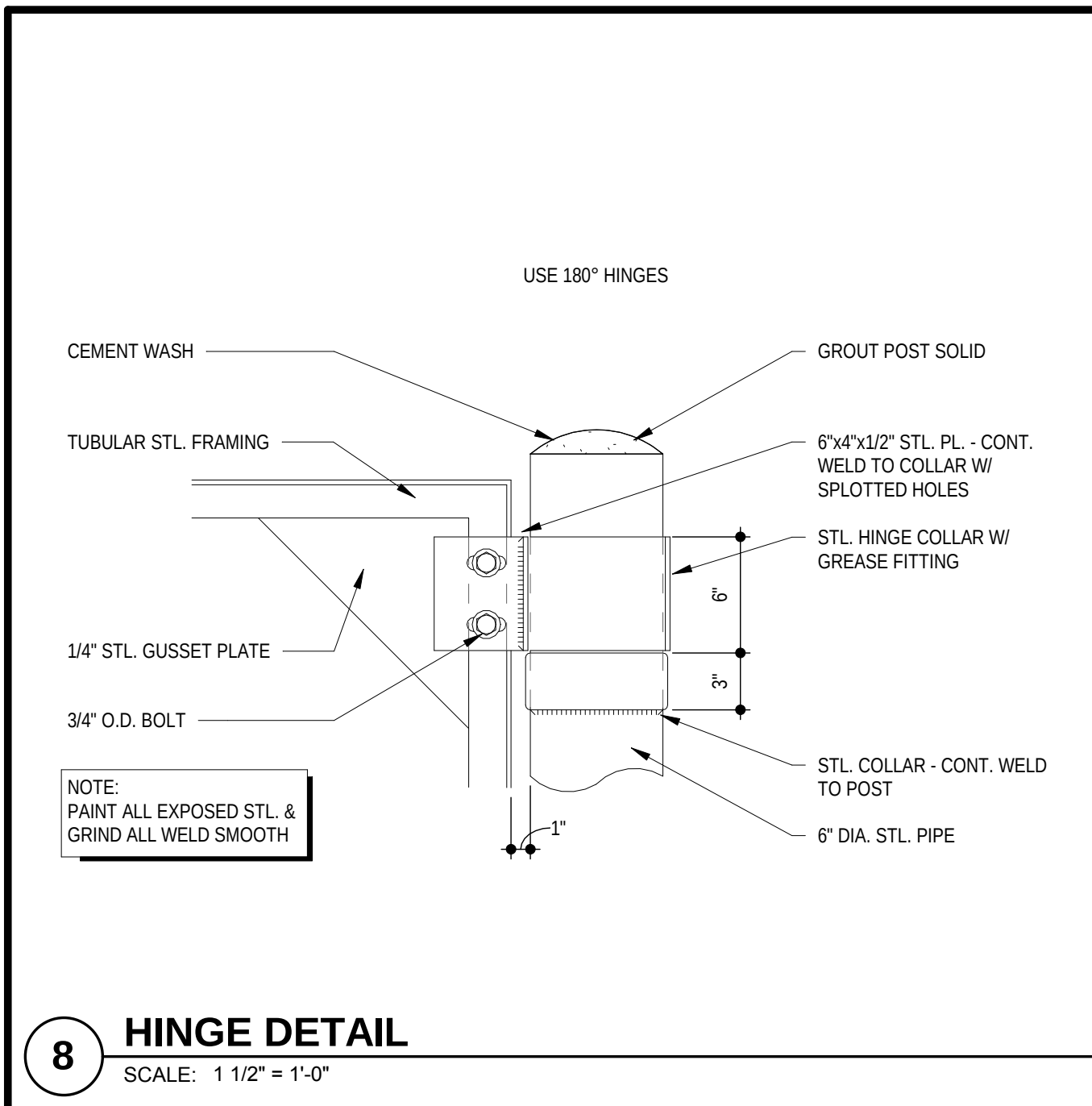
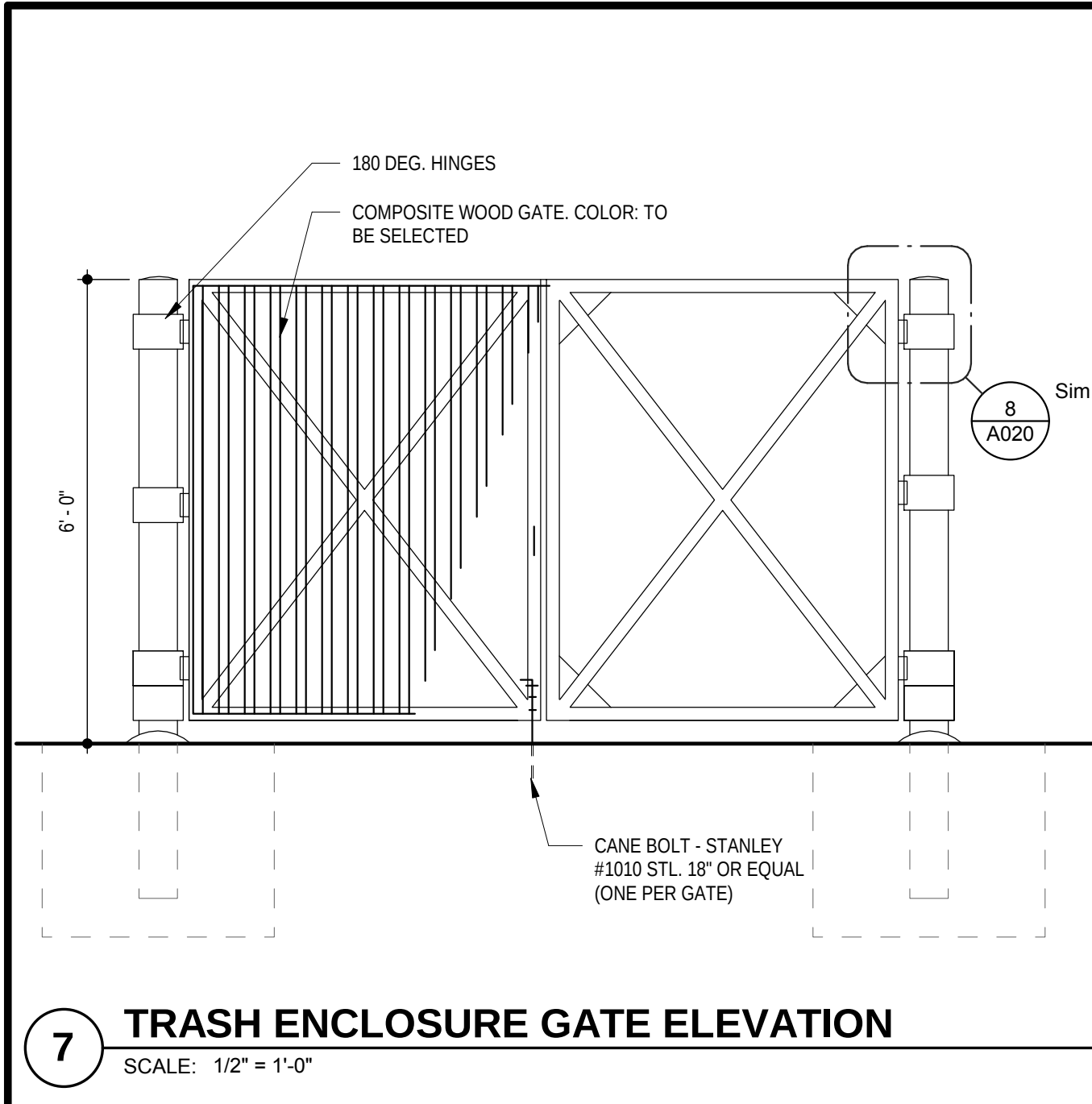
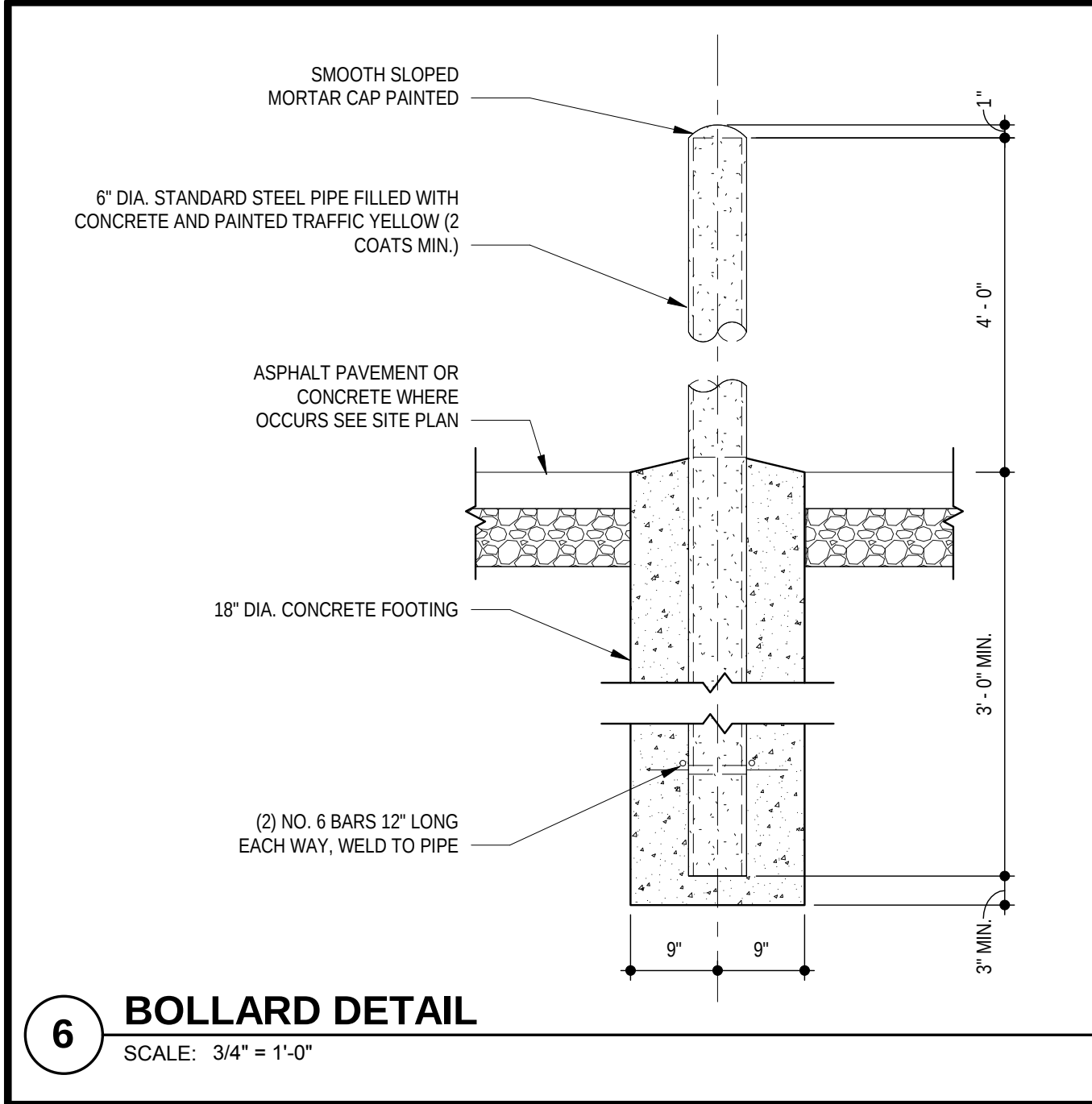
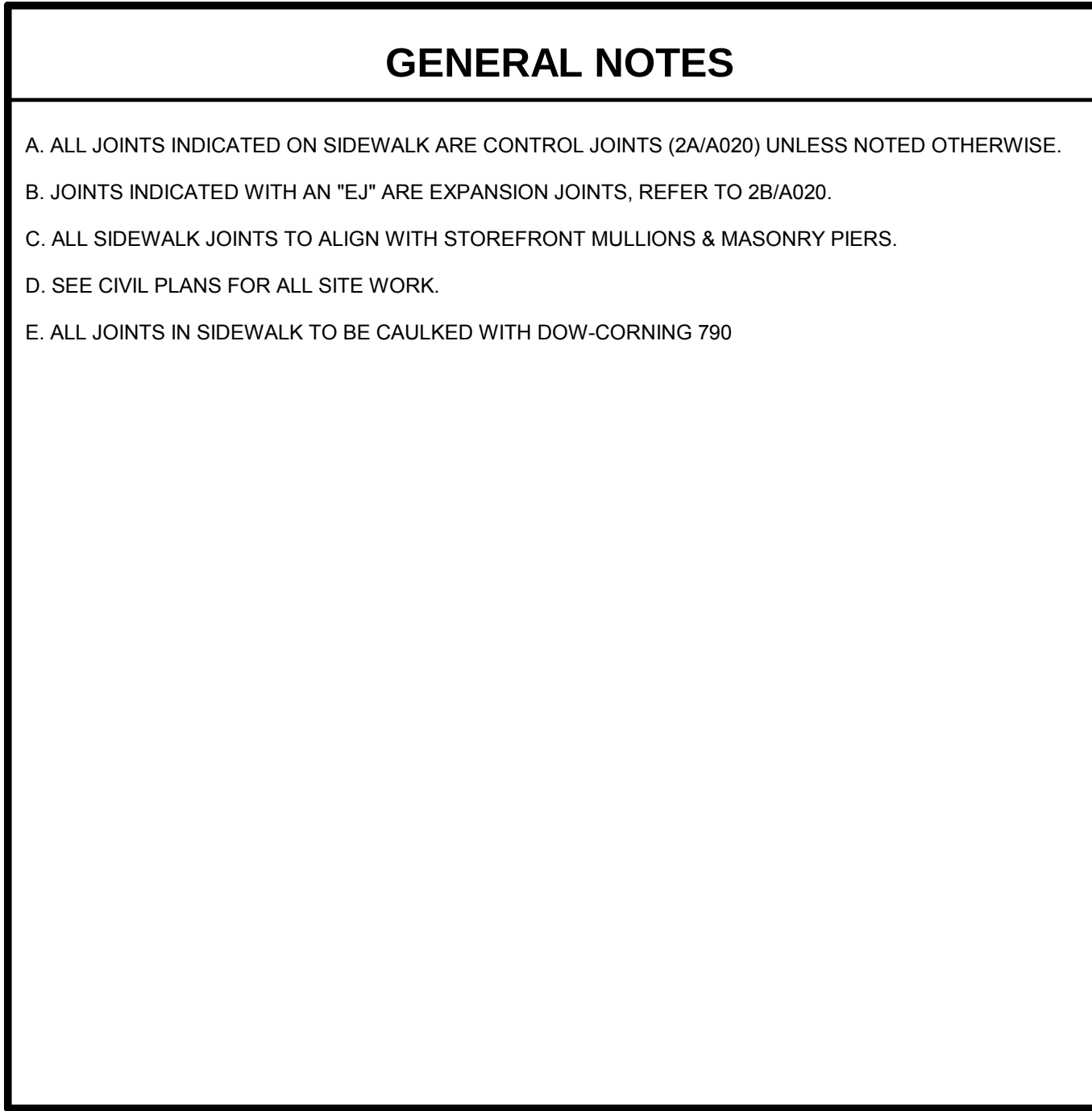
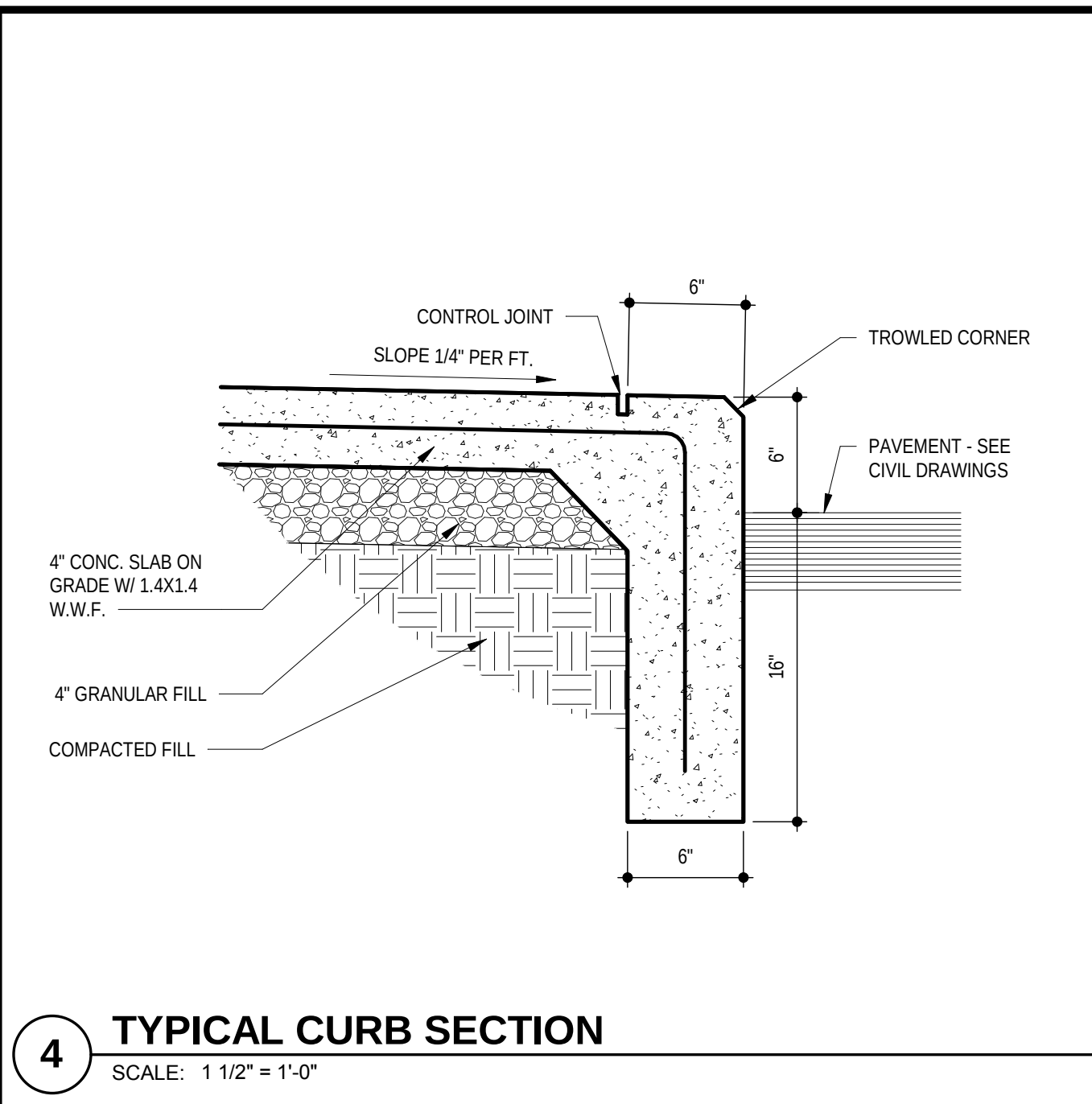
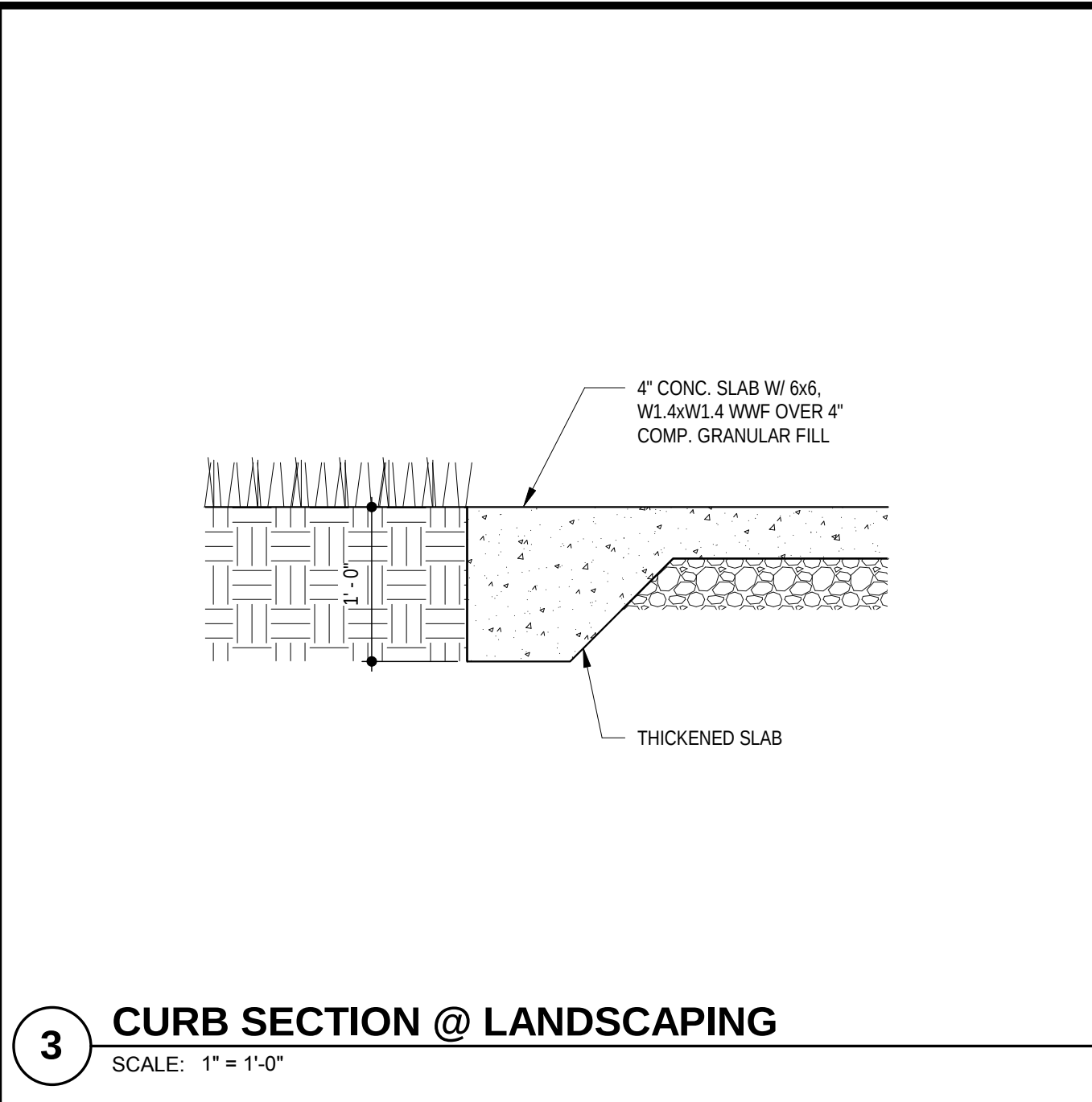
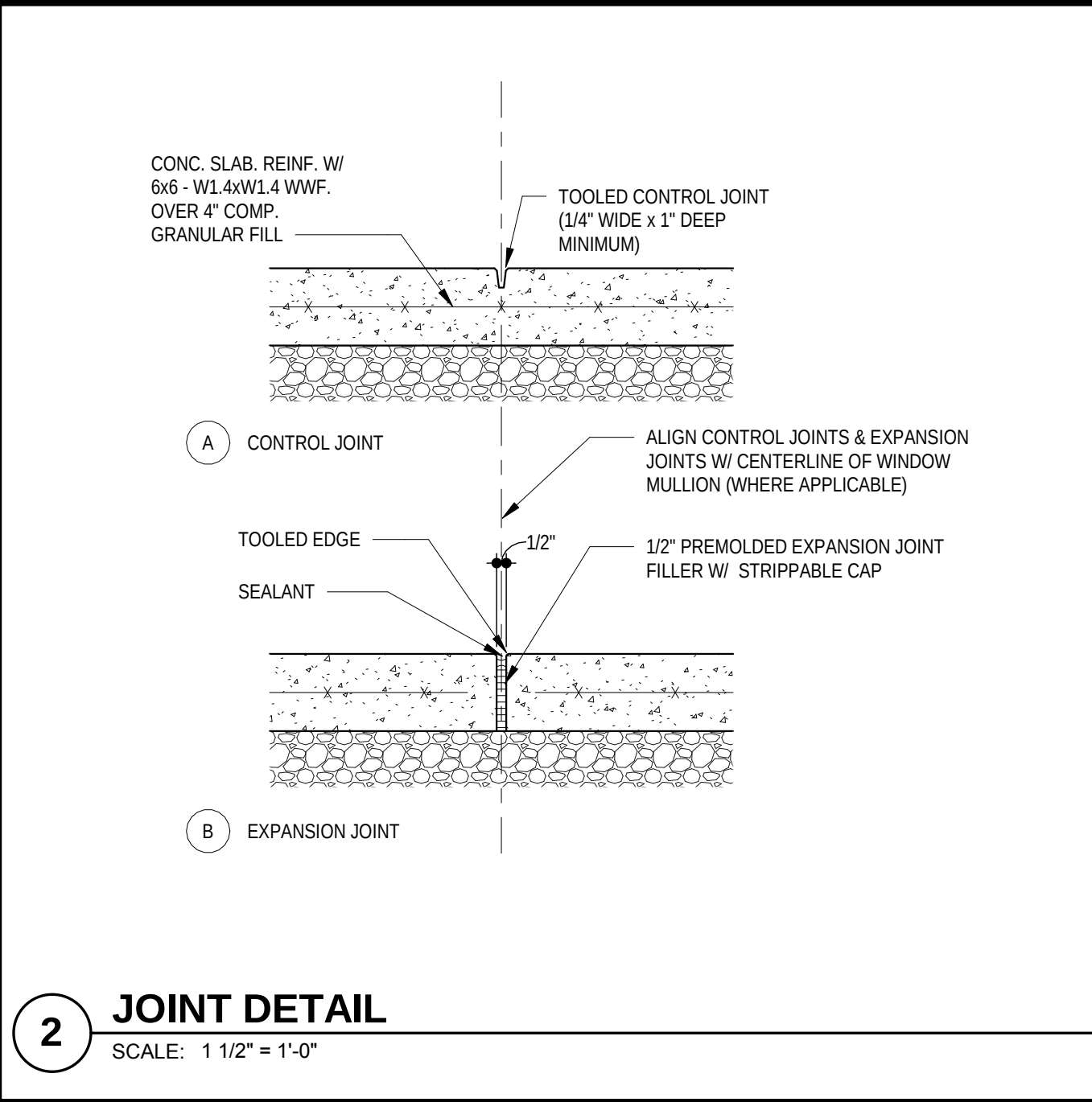
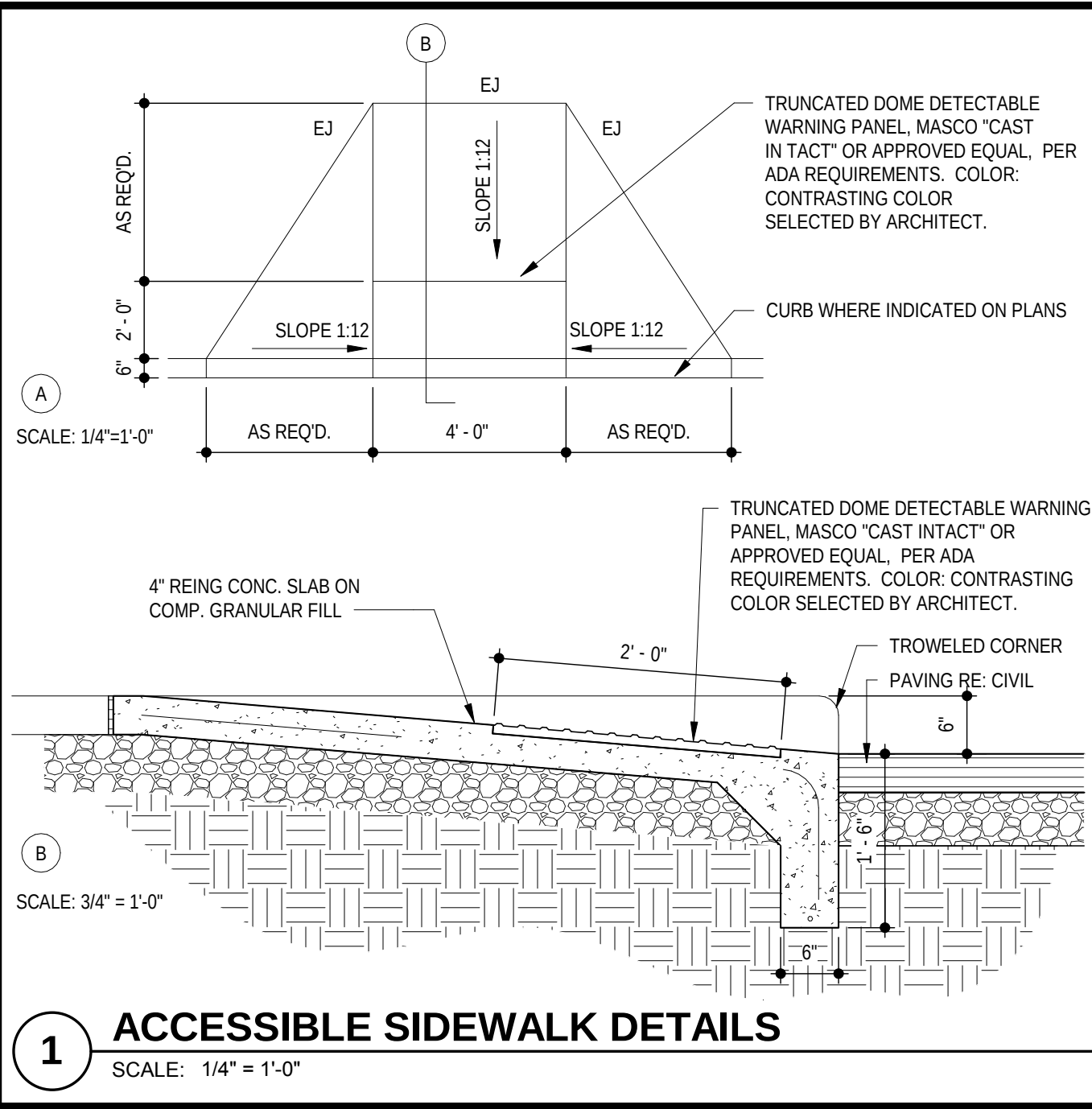
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SHEET NO.

A011
TYPICAL DETAILS



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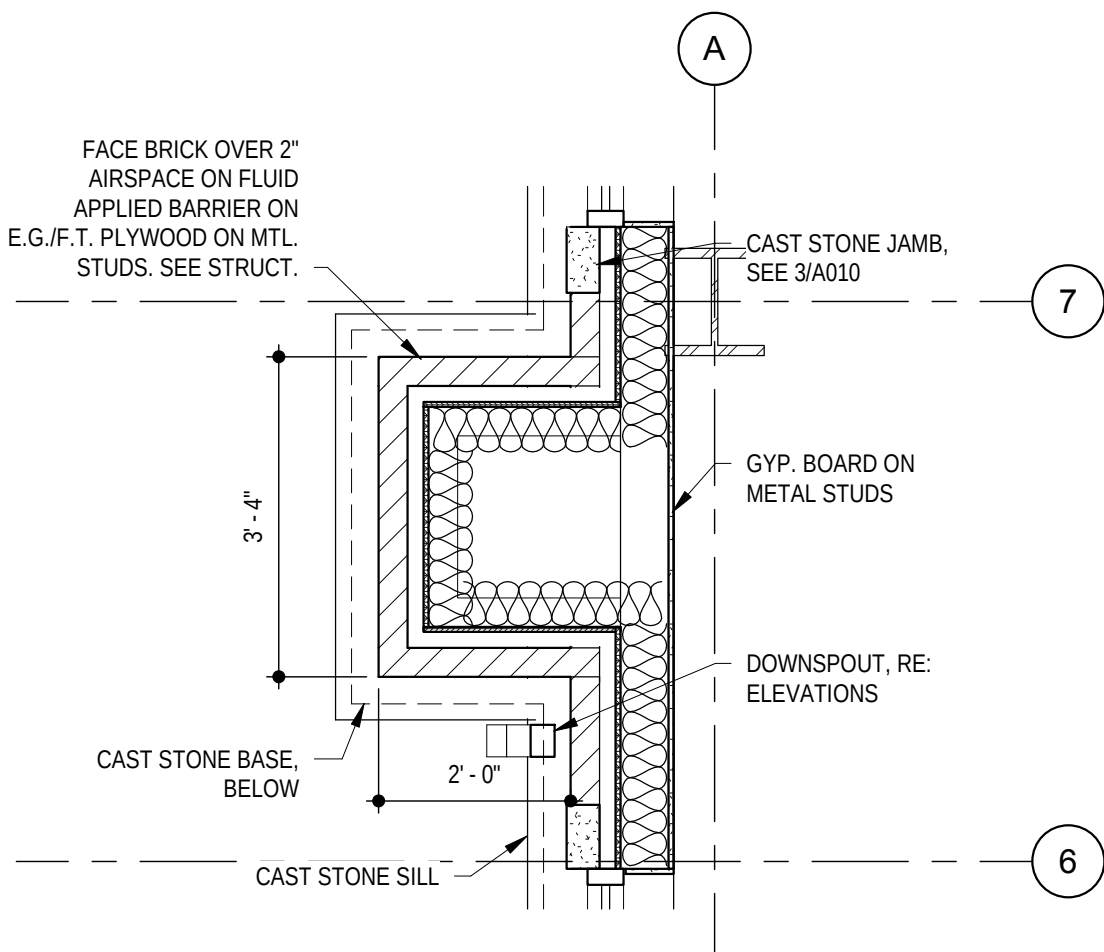
A020
ARCHITECTURAL SITE PLAN

GENERAL NOTES

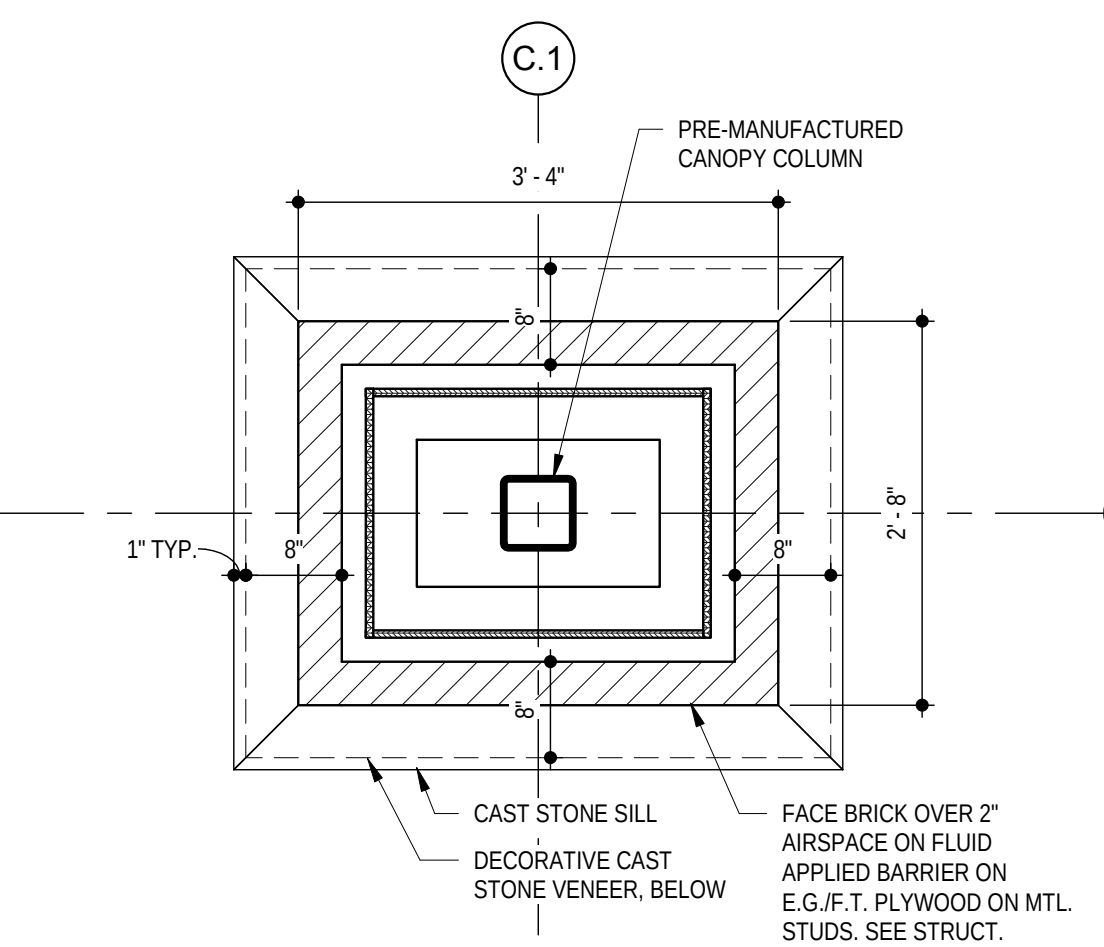
- A. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE, LOCATE AND CONFIRM ALL FLOOR SINK, UNDERGROUND / OVERHEAD PLUMBING AND ELECTRICAL STUB-UPS, SPOT GRADING AT PERIMETER FOUNDATIONS.
- B. THE ARCHITECT ASSUMES THE GENERAL CONTRACTOR HAS INCLUDED IN HIS BID THE HIGHEST QUALITY AND GREATEST QUANTITY FOR THE PURPOSE OF RESOLVING ANY CONFLICTS IN THE CONSTRUCTION DOCUMENTS WHICH ARE IMPLIED OR UNDEFINED.
- C. * ASSUMED FINISH FLOOR ELEVATION = 100.00" VERIFY ACTUAL FINISH FLOOR ELEVATION WITH CIVIL DRAWINGS.
- D. GENERAL CONTRACTOR TO CAULK AND SEAL EXPANSION JOINTS AT ALL EXTERIOR/INTERIOR CONCRETE - SEE MASONRY SPECIFICATIONS.
- E. GENERAL CONTRACTOR SHALL VERIFY GOVERNMENTAL REQUIREMENTS PRIOR TO BID AND INCLUDE IN BID ALL COSTS ASSOCIATED WITH FIRE ALARM SYSTEM INCLUDING AUDIO/VISUAL DEVICES AND PULL STATIONS WHERE REQUIRED.
- F. GENERAL CONTRACTOR WILL FURNISH & INSTALL 5 LB MULTIPURPOSE DRY CHEMICAL (2A/10BC) RATED FIRE EXTINGUISHERS IN SEMI-RECESSED CABINET @ 4'-0" A.F.F. AS REQUIRED BY GOVERNMENTAL AUTHORITIES. MAXIMUM TRAVEL DISTANCE OF 75'-0" FOR PLACEMENT.
- G. FLOOR COVERING: CONTRACTOR TO PROVIDE STEEL TRAWLED CONCRETE FLOOR THROUGHOUT (AS INDICATED ON FLOOR PLAN) READY TO RECEIVE TENANT'S FINISHED FLOOR. ALL CONCRETE SLABS TO RECEIVE MOISTURE VAPOR REDUCING ADMIXTURE.

FLOOR PLAN KEYED NOTES

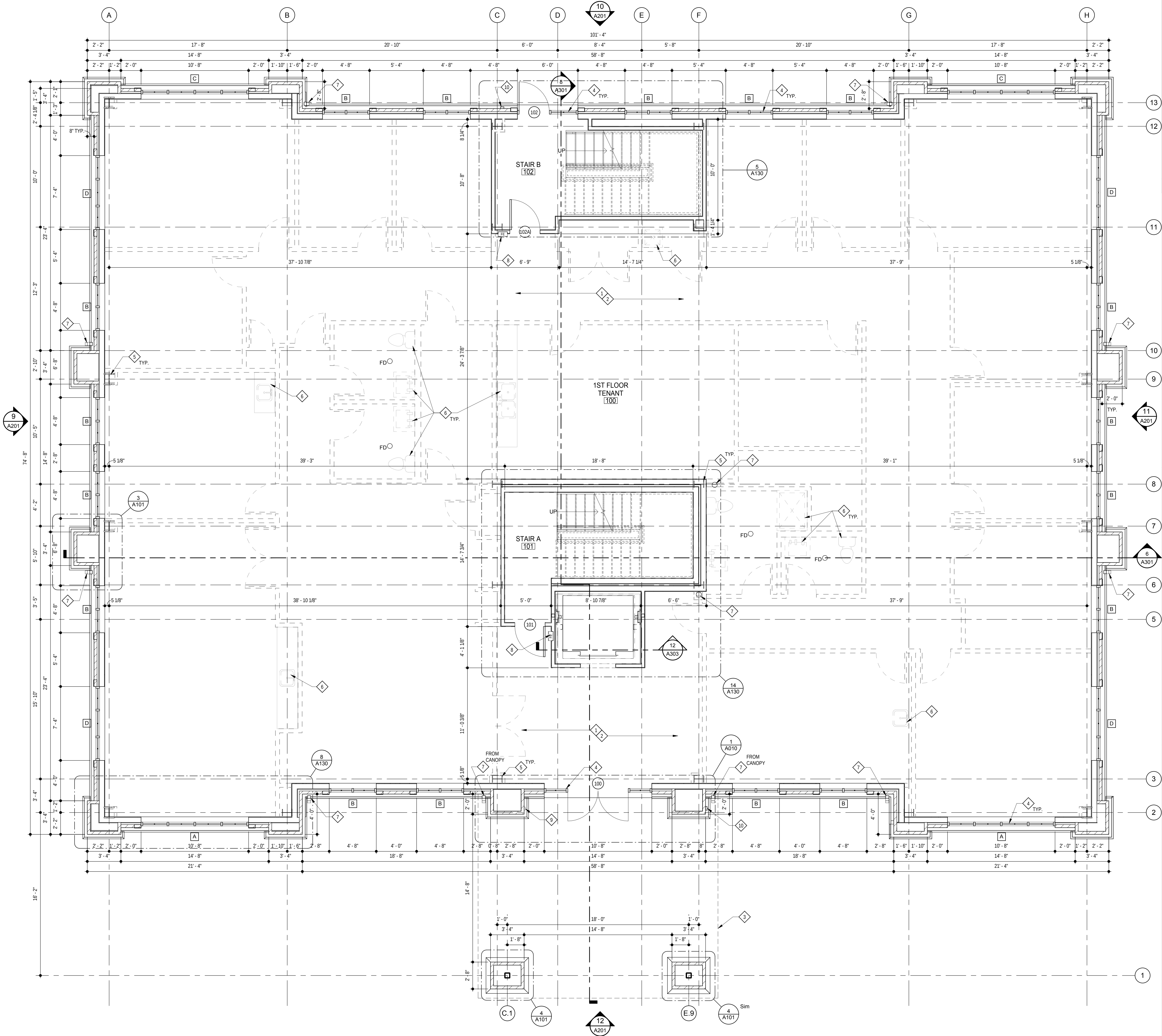
1. FINISH FLOOR ELEVATION ASSUMED ELEVATION 100'-0" TYPICAL U.N.O. RE: CIVIL DRAWINGS FOR ALL GRADE INFORMATION.
2. 4" CONCRETE FLOOR SLAB WITH 6"x6" - W1.4kW1.4 W.W.F. ON 10 MIL POLY FILM VAPOR BARRIER ON 4" GRANULAR FILL. RE: STRUCTURAL DWGS.
3. LINE OF CANOPY ABOVE; SEE ELEVATIONS & WALL SECTIONS.
4. ALUMINUM STOREFRONT SYSTEM WITH 1" INSULATED LOW-E GLASS, RE: BUILDING ELEVATIONS AND SPECIFICATIONS.
5. STEEL COLUMN. RE: STRUCTURAL DRAWINGS.
6. APPROXIMATE LOCATION FOR FUTURE PLUMBING ROUGH-INS. ALL DASHED WALLS & DOORS SHOWN FOR REFERENCE ONLY.
7. APPROXIMATE LOCATION OF DOWNSPOUT, TIED TO STORM SEWER. RE: PLUMBING & CIVIL DWGS.
8. FIRE EXTINGUISHER AND CABINET PER SPECS. COORDINATE FINAL LOCATIONS W/ AHJ.
9. LOCATION OF FIRE DEPARTMENT KNOX BOX. COORDINATE LOCATION WITH LOCAL FIRE MARSHALL PRIOR TO INSTALLATION.
10. HOSE BIBB, RE: PLUMBING DWGS.



3 PLAN DETAIL
SCALE: 1/2" = 1'-0"



4 PLAN DETAIL
SCALE: 3/4" = 1'-0"



8 FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"

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SHEET NO.

A101

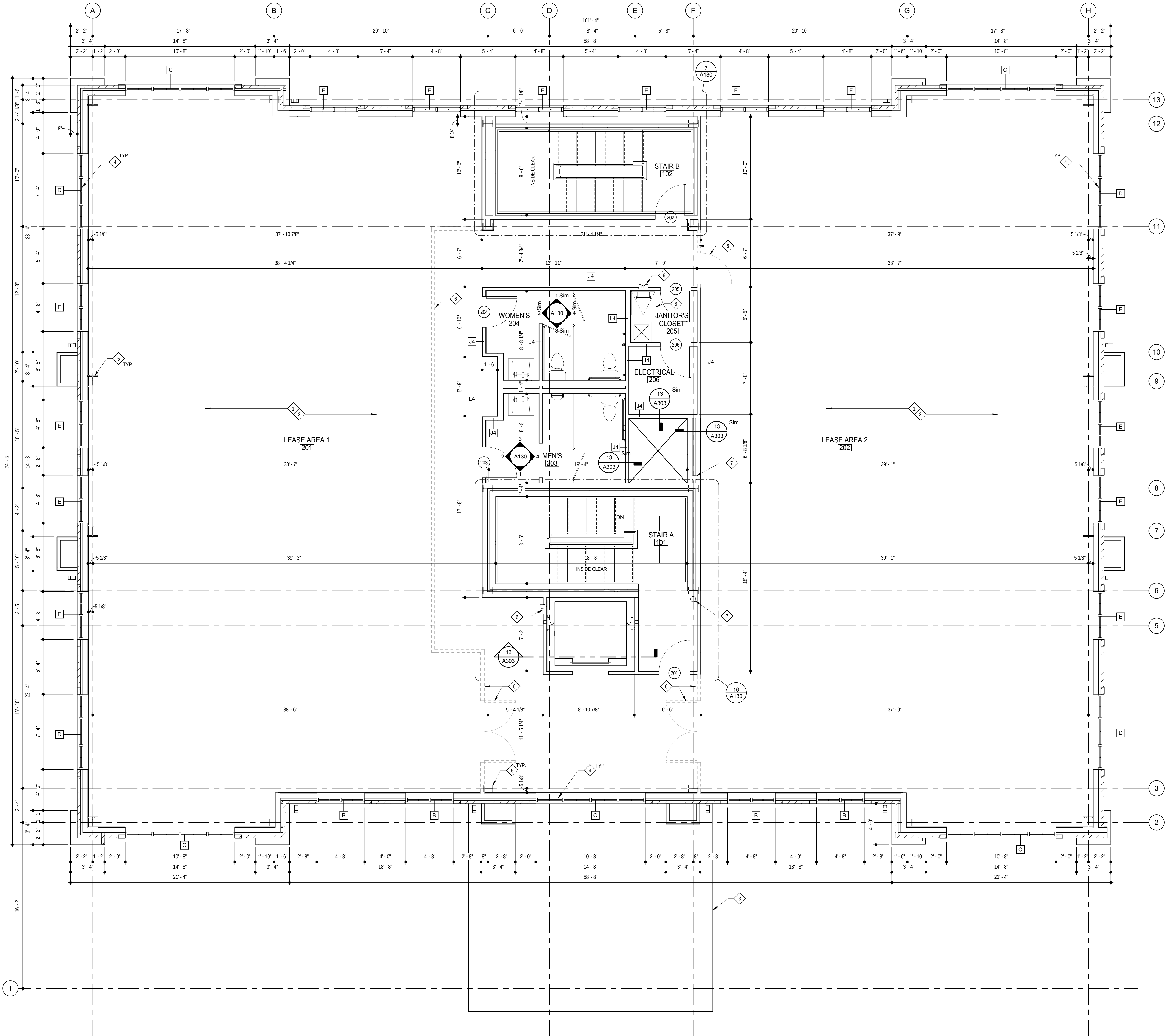
FIRST FLOOR PLAN

GENERAL NOTES

- A. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE, LOCATE AND CONFIRM ALL FLOOR SINK, UNDERGROUND / OVERHEAD PLUMBING AND ELECTRICAL STUB-UPS, SPOT GRADING AT PERIMETER FOUNDATIONS.
- B. THE ARCHITECT ASSUMES THE GENERAL CONTRACTOR HAS INCLUDED IN HIS BID THE HIGHEST QUALITY AND GREATEST QUANTITY FOR THE PURPOSE OF RESOLVING ANY CONFLICTS IN THE CONSTRUCTION DOCUMENTS WHICH ARE IMPLIED OR UNDEFINED.
- C. * ASSUMED FINISH FLOOR ELEVATION = 116' 8".
- D. GENERAL CONTRACTOR TO CAULK AND SEAL EXPANSION JOINTS AT ALL EXTERIOR/INTERIOR CONCRETE - SEE MASONRY SPECIFICATIONS.
- E. GENERAL CONTRACTOR SHALL VERIFY GOVERNMENTAL REQUIREMENTS PRIOR TO BID AND INCLUDE IN BID ALL COSTS ASSOCIATED WITH FIRE ALARM SYSTEM INCLUDING AUDIO/VISUAL DEVICES AND PULL STATIONS WHERE REQUIRED.
- F. GENERAL CONTRACTOR WILL FURNISH & INSTALL 5 LB MULTIPURPOSE DRY CHEMICAL (2A/10BC) RATED FIRE EXTINGUISHERS IN SEMI-RECESSED CABINET @ 4'-0" A.F.F. AS REQUIRED BY GOVERNMENTAL AUTHORITIES. MAXIMUM TRAVEL DISTANCE OF 75'-0" FOR PLACEMENT.
- G. FLOOR COVERING: CONTRACTOR TO PROVIDE STEEL TRAWLED CONCRETE FLOOR THROUGHOUT (AS INDICATED ON FLOOR PLAN) READY TO RECEIVE TENANT'S FINISHED FLOOR. ALL CONCRETE SLABS TO RECEIVE MOISTURE VAPOR REDUCING ADMIXTURE.

FLOOR PLAN KEYED NOTES

1. FINISH FLOOR ELEVATION ASSUMED ELEVATION 116'-8" TYPICAL U.N.O.
2. 2 1/2" CONCRETE FLOOR SLAB WITH 6"x6" - W1.4xW1.4 W.W.F. ON METAL DECK. (4 1/2" TOTAL THICKNESS) RE: STRUCTURAL DWGS.
3. LINE OF CANOPY BELOW; SEE ELEVATIONS & WALL SECTIONS.
4. ALUMINUM STOREFRONT SYSTEM WITH 1" INSULATED LOW-E GLASS, RE: BUILDING ELEVATIONS AND SPECIFICATIONS.
5. STEEL COLUMN. RE: STRUCTURAL DRAWINGS.
6. FIRE EXTINGUISHER AND CABINET PER SPECS. COORDINATE FINAL LOCATIONS W/ AHJ.
7. APPROXIMATE LOCATION OF DOWNSPOUT, TIED TO STORM SEWER. RE: CIVIL DWGS
8. ROOF ACCESS LADDER & HATCH, RE: DETAILS 2 & 5/A011.
9. FUTURE WALLS AND DOORS SHOWN DASHED.



8 SECOND FLOOR PLAN
SCALE: 1/4" = 1'-0"

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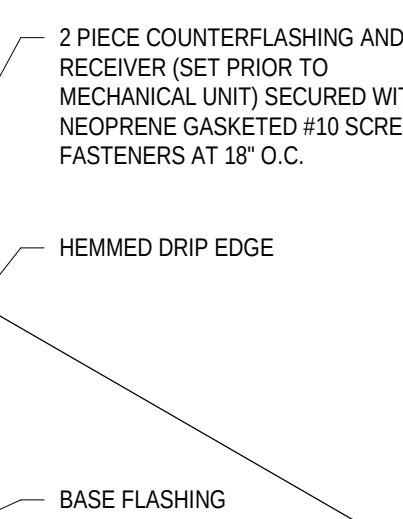
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A102
SECOND FLOOR PLAN

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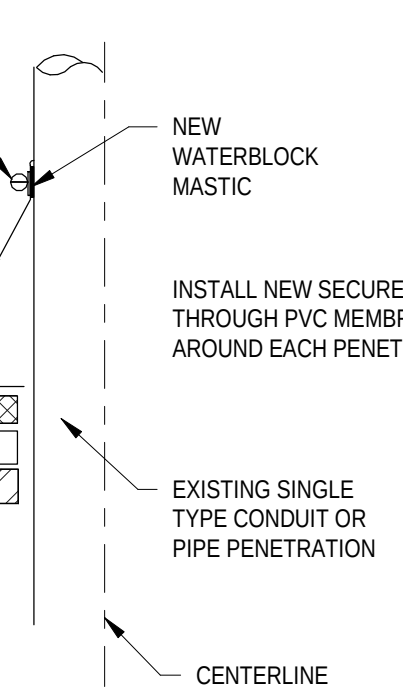
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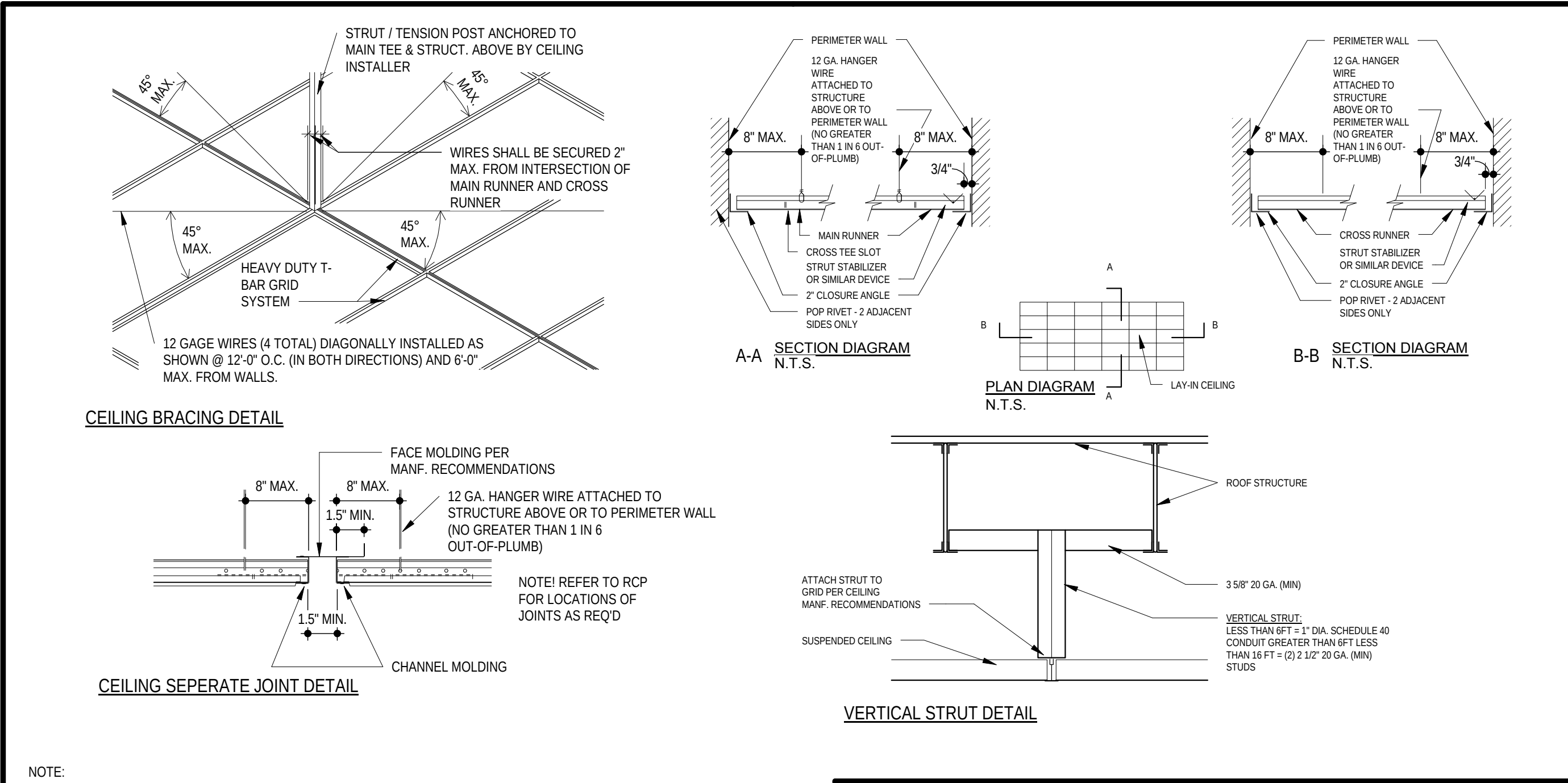


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DESIGN/BUILD



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NOTE:

A. CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH ASTM C635-04 STANDARD SPECIFICATION FOR THE MANUFACTURE, PERFORMANCE, AND TESTING OF METAL SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND LAY-IN PANEL CEILINGS & ASTM C638-04 STANDARD PRACTICE FOR INSTALLATION OF METAL CEILING SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND LAY-IN PANELS.

B. CONSTRUCTION AND INSTALLATION TO BE IN ACCORDANCE WITH ASCE 7, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", SECTION 5, "EARTHQUAKE LOADS".

C. HANGER WIRES SHOWN ARE IN ADDITION TO TYPICAL CEILING SUSPENSION WIRES.

D. DO NOT HANG CEILING SYSTEM OFF OF DUCTWORK.

E. THIS HORIZONTAL RESTRAINT IS NOT REQUIRED FOR ROOM SIZES LESS THAN 144 S.F. WHERE SURROUNDING WALLS/PARTITIONS CONNECT DIRECTLY TO THE STRUCTURE ABOVE.

F. THE MAIN AND CROSS RUNNERS SHALL BE TIED TOGETHER TO PREVENT TWISTING.

G. PROVIDE NO. 12 GAUGE VERTICAL SUPPORT WIRES ARE NEEDED IN THE FOLLOWING LOCATIONS:

- 4" ON CENTER SPACING ALONG THE MAIN RUNNER.
- LIGHT FIXTURES MUST BE POSITIVELY ATTACHED TO THE CEILING GRID WITH AN ATTACHMENT CAPABLE OF CARRYING 100% OF THE WEIGHT OF THE LIGHT FIXTURE LIGHT FIXTURES WEIGHING UP TO 56 POUNDS REQUIRE TWO VERTICAL SUPPORT WIRES. THESE WIRES MAY BE SLACK. LIGHT FIXTURES WEIGHING MORE THAN 56 POUNDS SHALL REQUIRE INDEPENDENT SUPPORT FROM THE SHELL BUILDING STRUCTURE ABOVE THE CEILING.
- MECHANICAL AIR TERMINALS WEIGHING LESS THAN 20 POUNDS SHALL BE POSITIVELY ATTACHED TO THE CEILING GRID. AIR TERMINALS WEIGHING 20 POUNDS BUT NOT MORE THAN 56 POUNDS SHALL BE SECURED TO THE SHELL BUILDING STRUCTURE ABOVE THE CEILING IN ADDITION TO ATTACHING THE AIR TERMINAL TO THE CEILING GRID. THESE TWO NO. 12 GAUGE WIRES MAY BE SLACK. AIR TERMINALS WEIGHING MORE THAN 56 POUNDS SHALL REQUIRE INDEPENDENT SUPPORT FROM THE SHELL BUILDING STRUCTURE ABOVE THE CEILING.

H. SPRINKLER HEADS AND OTHER PENETRATIONS OF THE SUSPENDED CEILING SHALL HAVE A 2" OVERSIZE RING, SLEEVE, OR ADAPTOR TO ALLOW 1" HORIZONTAL MOVEMENT IN ALL DIRECTIONS.

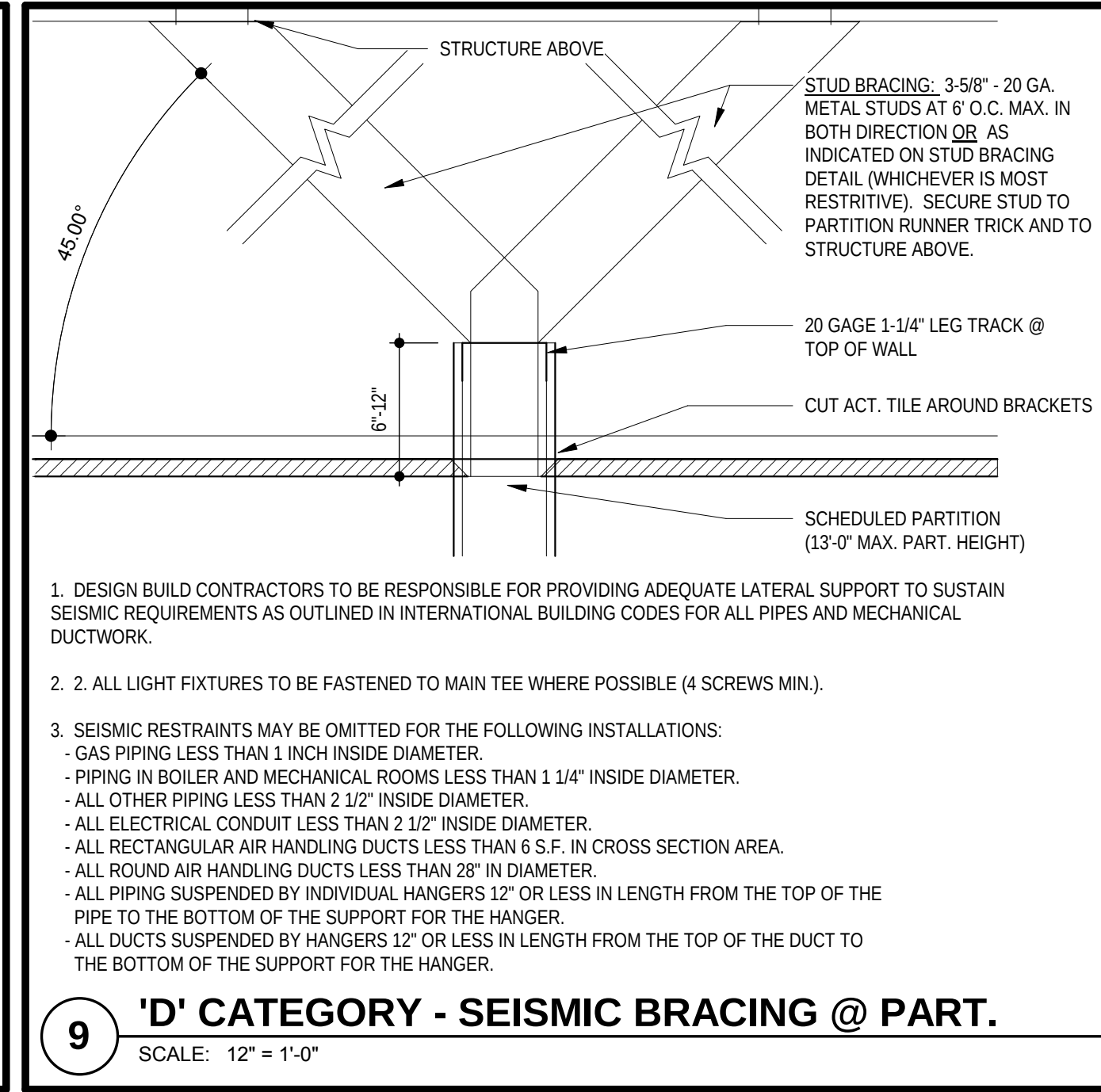
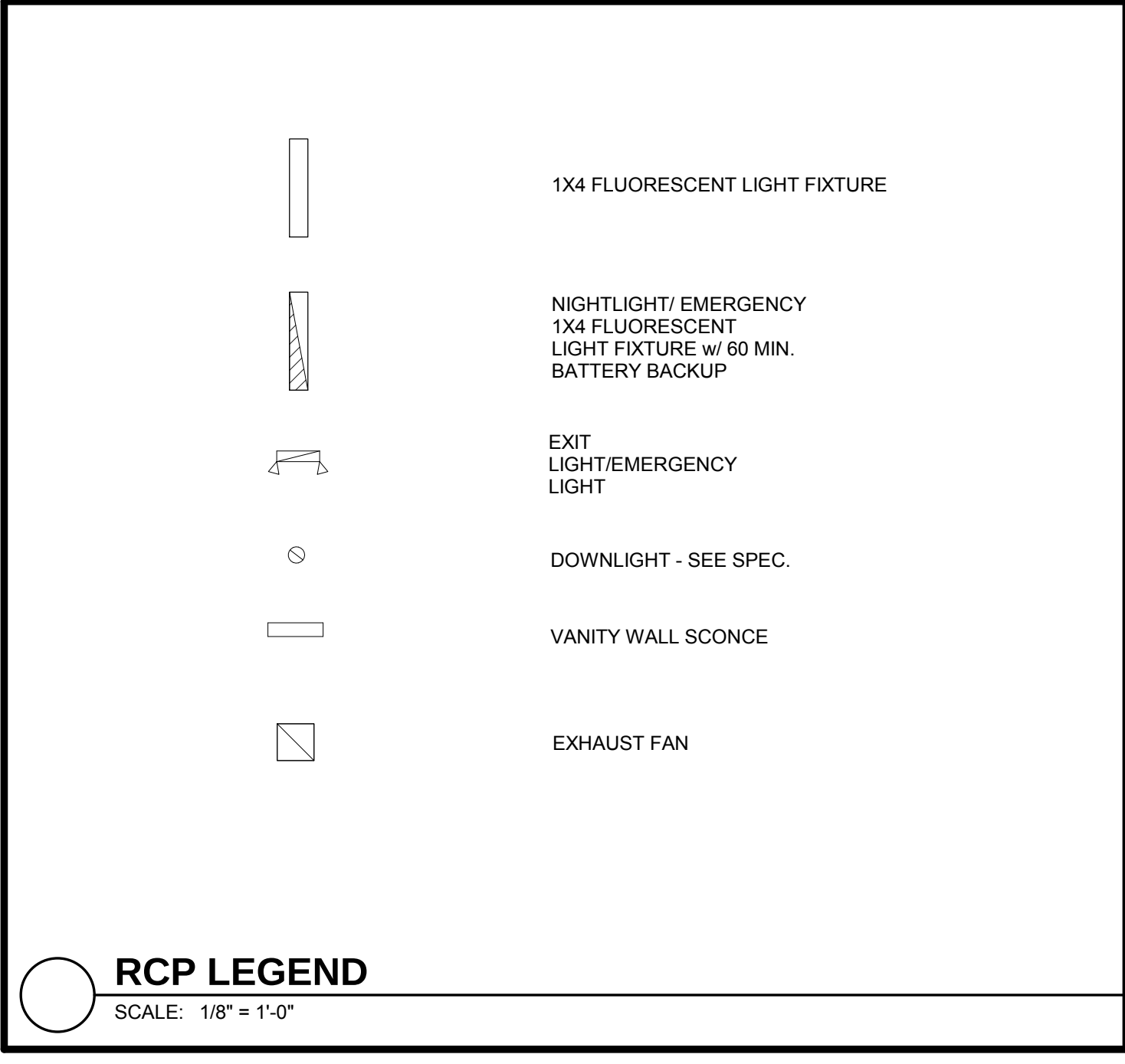
I. ALL WALL PARTITIONS GREATER THAN 6' IN HEIGHT SHALL BE INDEPENDENTLY BRACED TO THE BUILDING SHELL STRUCTURE. WALL PARTITIONS MAY NOT BE SUPPORTED BY THE BRACED SUSPENDED CEILING ALONE.

J. IN ADDITION TO ITEMS F THROUGH I ABOVE, SUSPENDED CEILINGS EXCEEDING 1,000 SQUARE FEET IN AREA REQUIRE FOUR NO. 12 GAUGE SPLAY WIRES AND A RIGID VERTICAL COMPRESSION STRUT EVERY 12 FEET ON CENTER STARTING A MAXIMUM OF 6 FEET FROM EACH WALL. THE SPLAY WIRES SHALL BE SECURED TO THE MAIN RUNNER WITHIN 2 INCHES OF THE CROSS RUNNER INTERSECTION AND SPLAYED 90 DEGREES FROM EACH OTHER AT AN ANGLE NOT EXCEEDING 45 DEGREES FROM THE PLANE OF THE CEILING.

K. IN ADDITION TO ITEMS F THROUGH J ABOVE, SUSPENDED CEILINGS EXCEEDING 2,500 SQUARE FEET SHALL HAVE A SEPARATION JOINT OR A FULL HEIGHT WALL PARTITION SEPARATING THE SUSPENDED CEILING INTO AREAS LESS THAN 2,500 SQUARE FEET. REFER TO CEILING SEPARATION JOINT DETAIL.

2 'D' CATEGORY - SEISMIC BRACING CEILING DETAIL

SCALE: 12" = 1'-0"



RCP GENERAL NOTES:

A. COORDINATE BALANCE OF ALL LIGHTING, CEILINGS, HVAC, ETC. WITH DESIGN/BUILD AND TENANT FINISH, UNDER SEPARATE PACKAGE.

B. ALL EXPOSED GYP. BOARD CEILINGS TO BE PAINTED

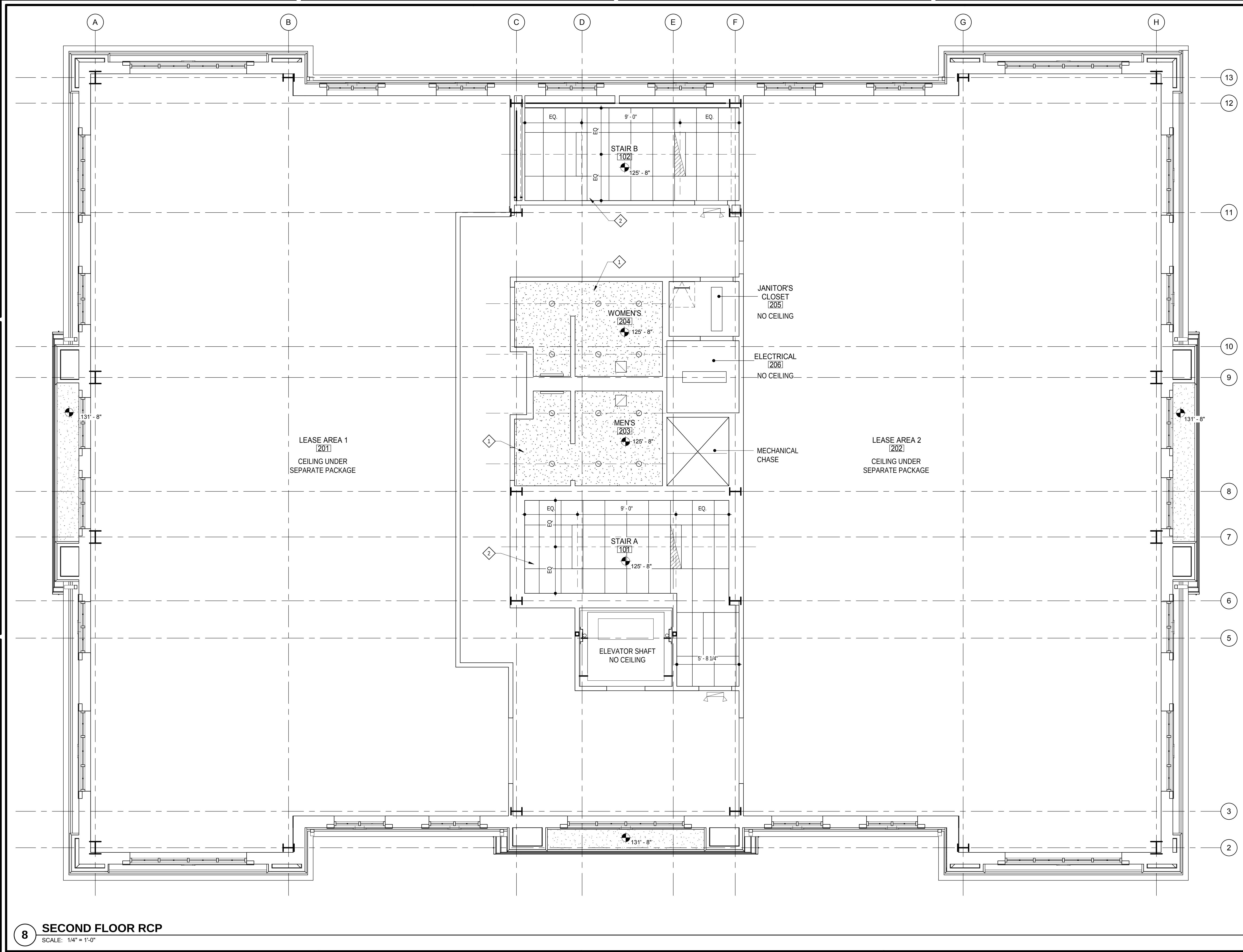
C. EXHAUST FAN. RE: MECHANICAL DESIGN/BUILD

RCP KEYED NOTES:

1. 5/8" GYP. BD. CEILING

2. 2x4 SECOND LOOK LAY-IN CEILING & SUSPENDED GRID SYSTEM - COORDINATE FINAL PRODUCTS AND GRID LAYOUT WITH TENANT PRIOR TO INSTALLATION.

3. EXHAUST FAN. RE: MECHANICAL DESIGN/BUILD



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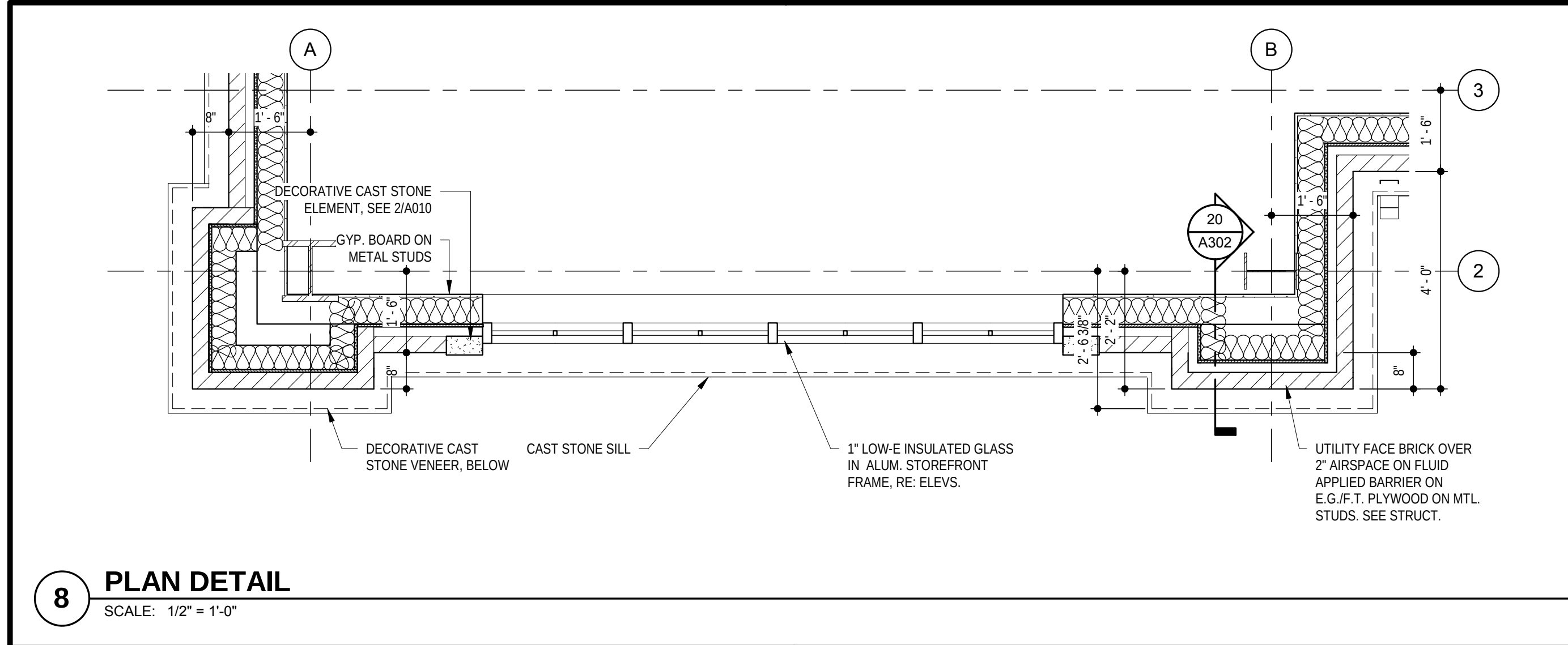
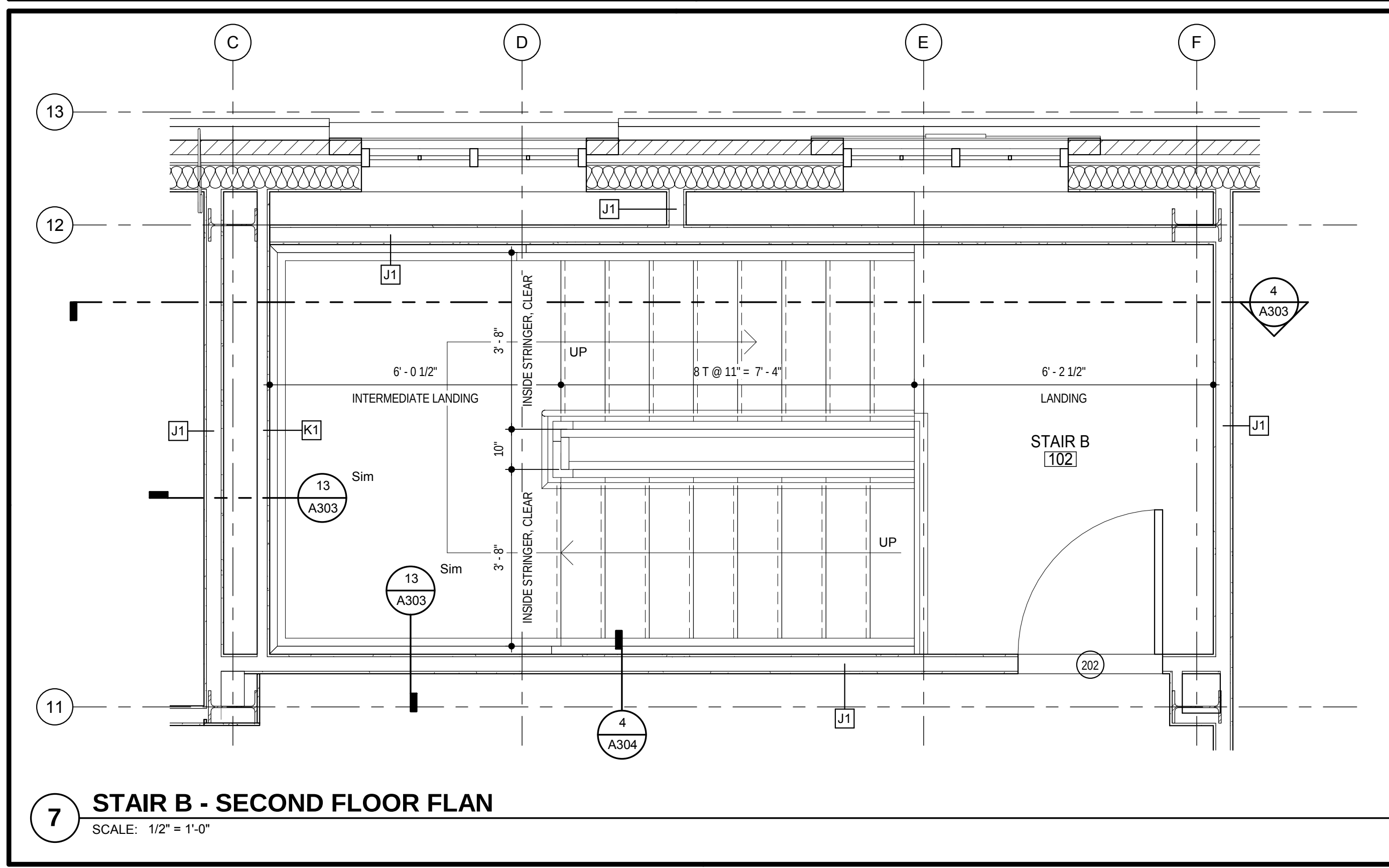
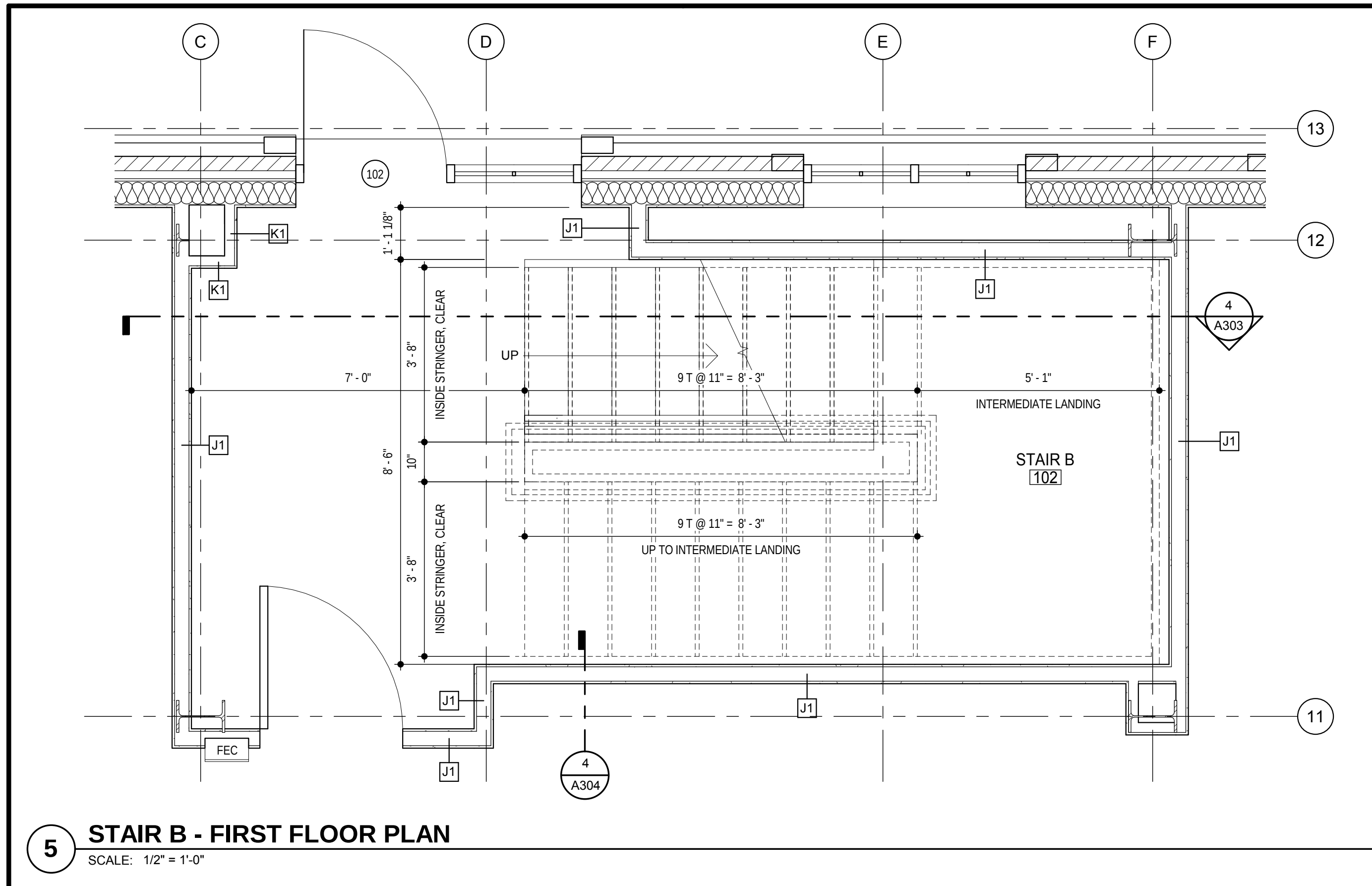
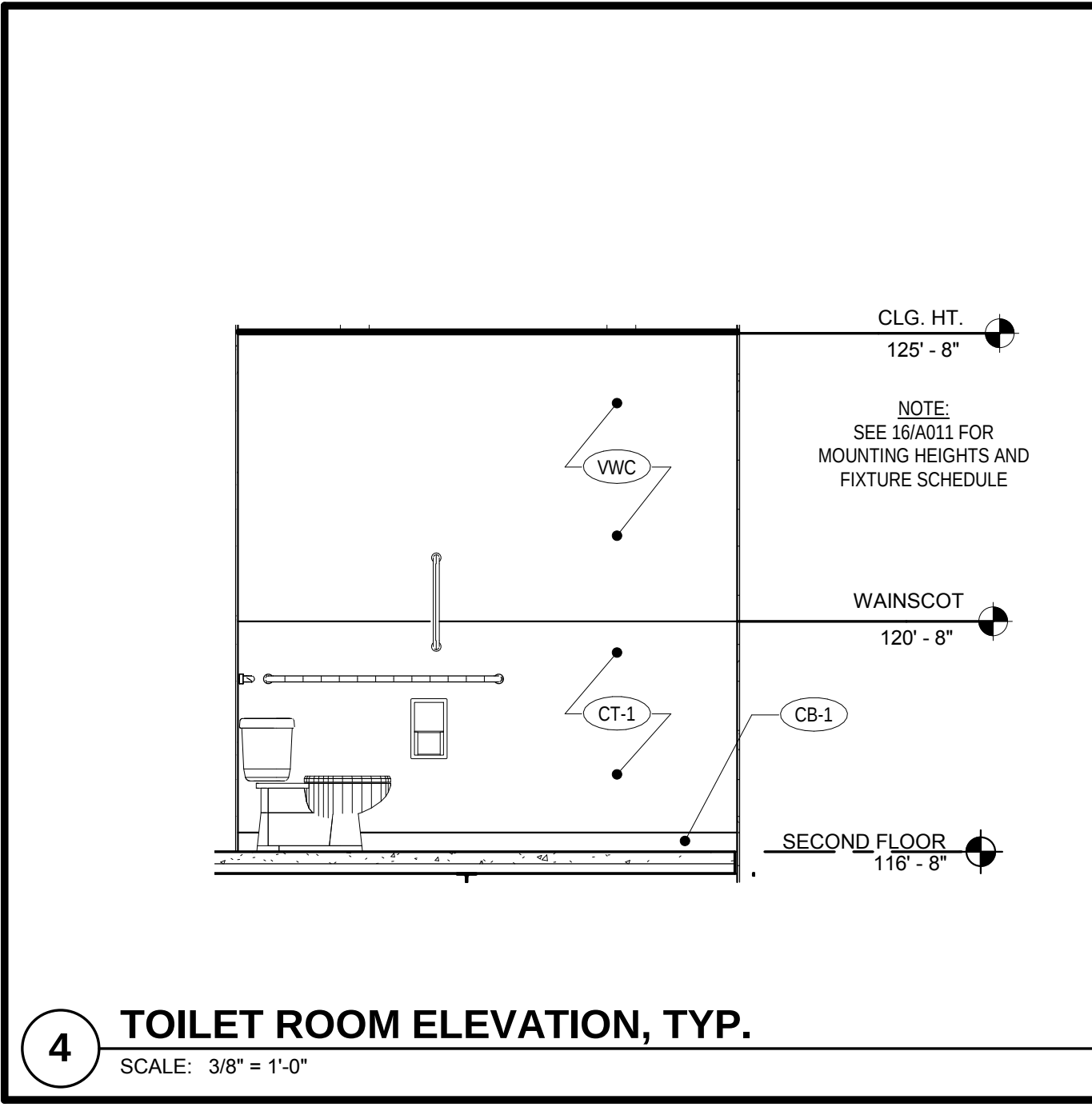
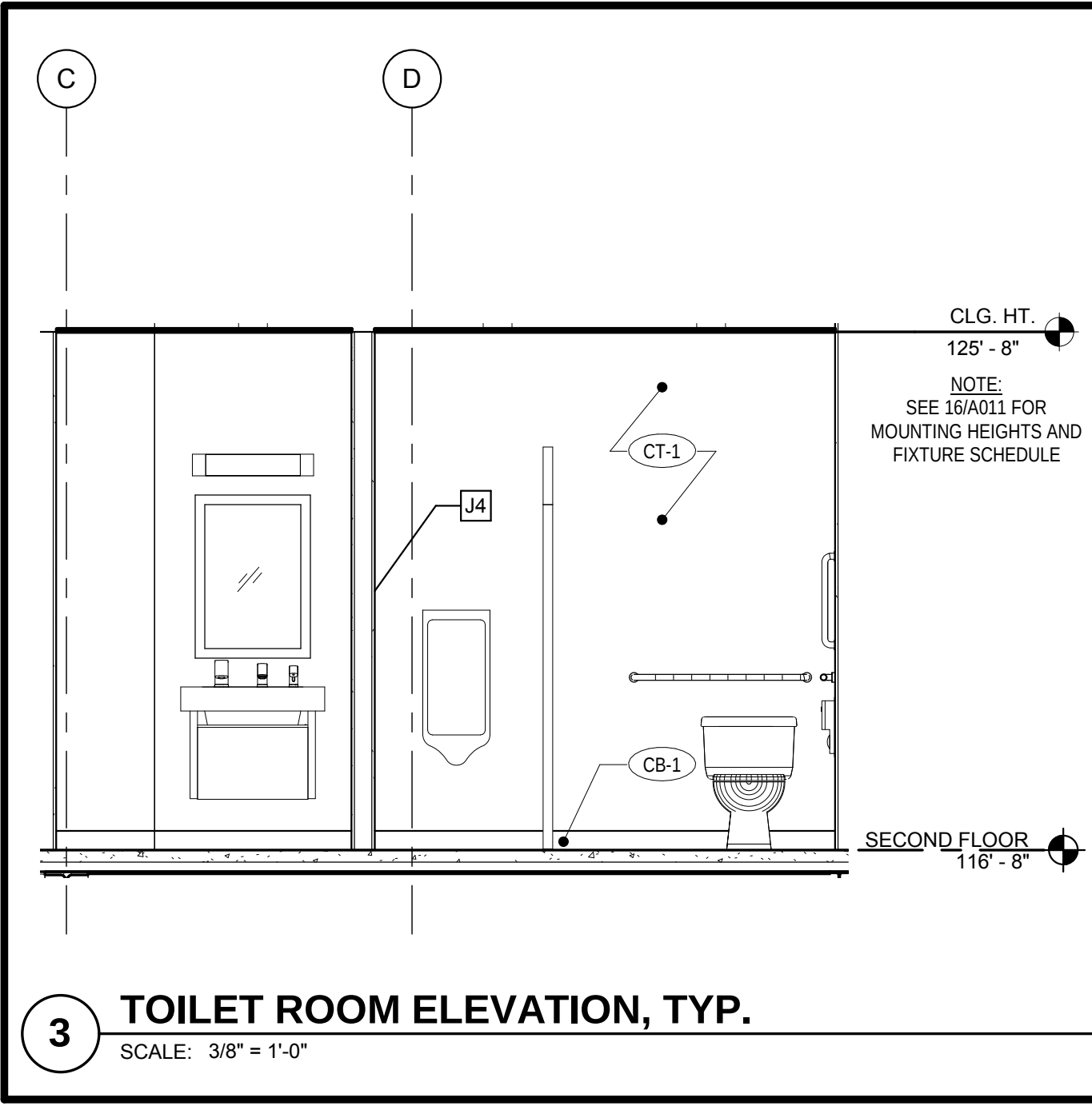
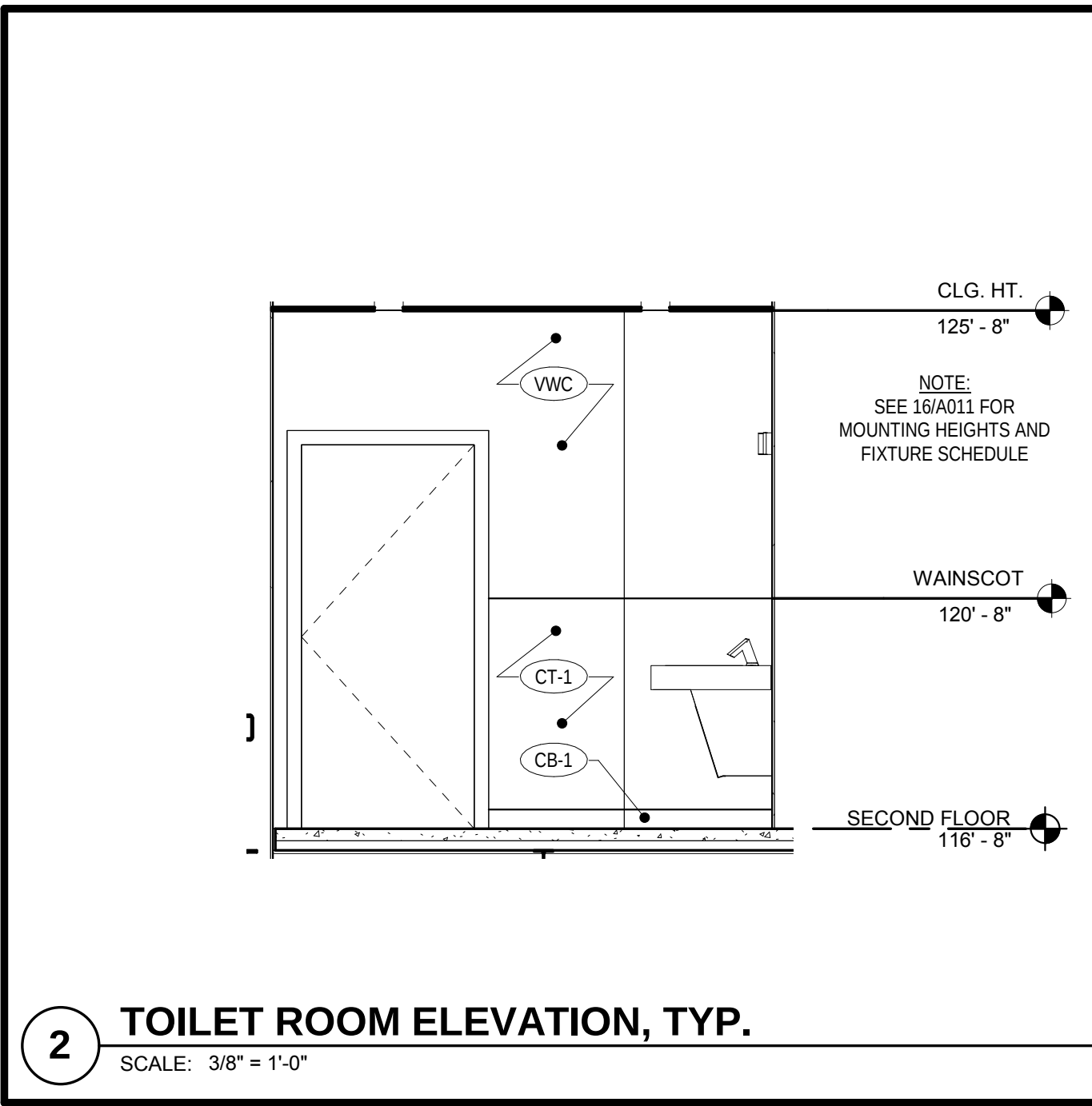
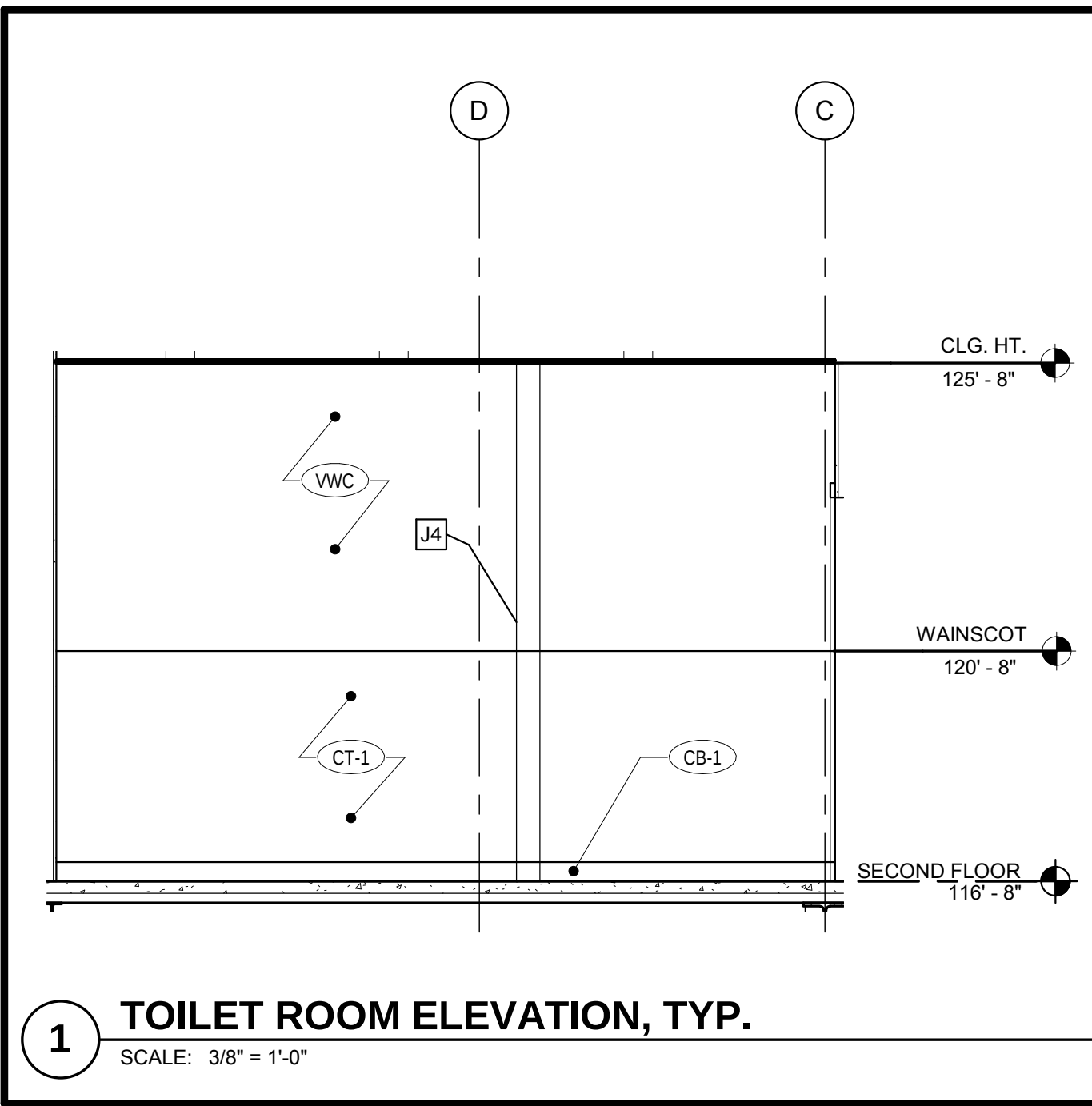
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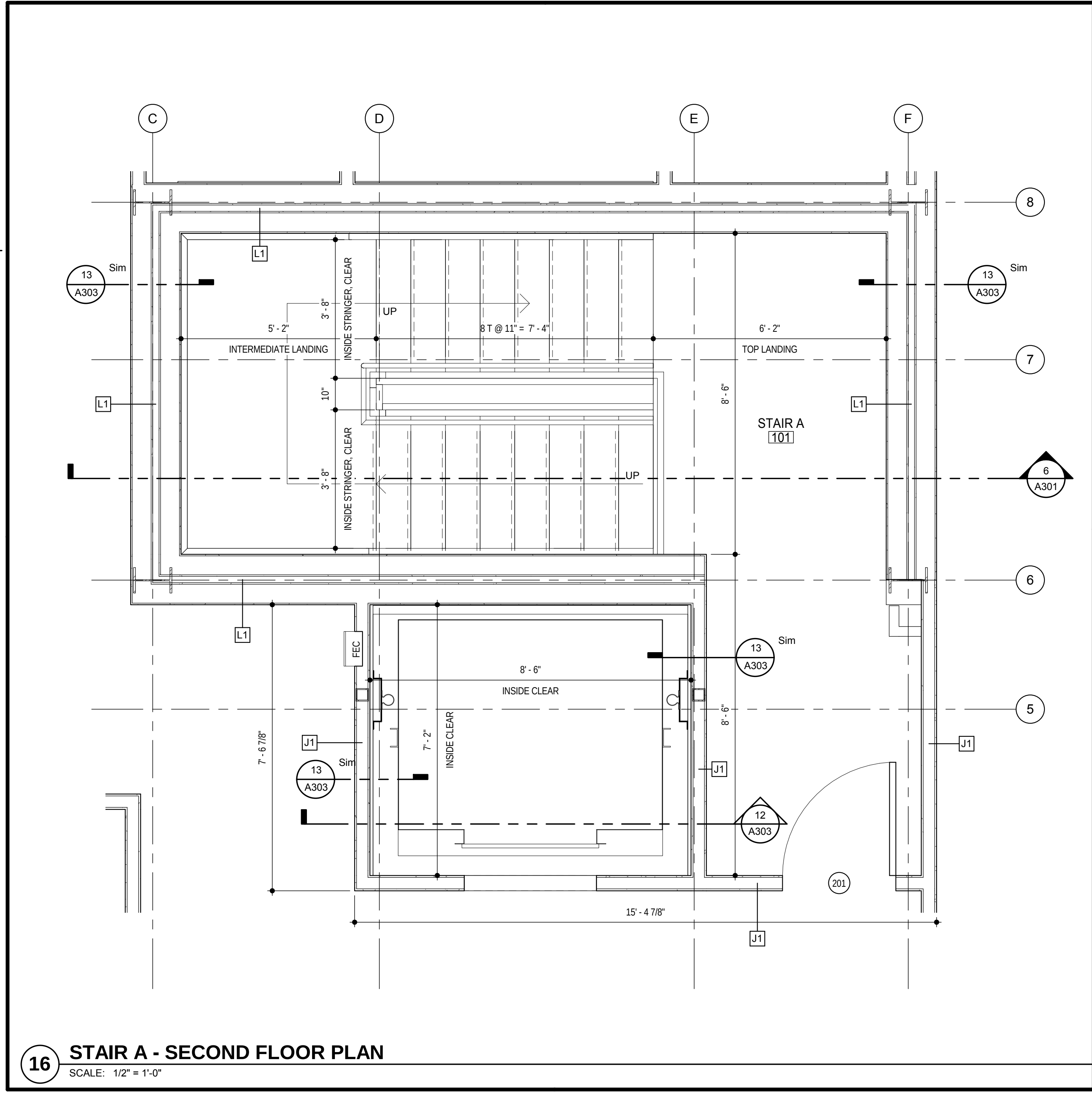
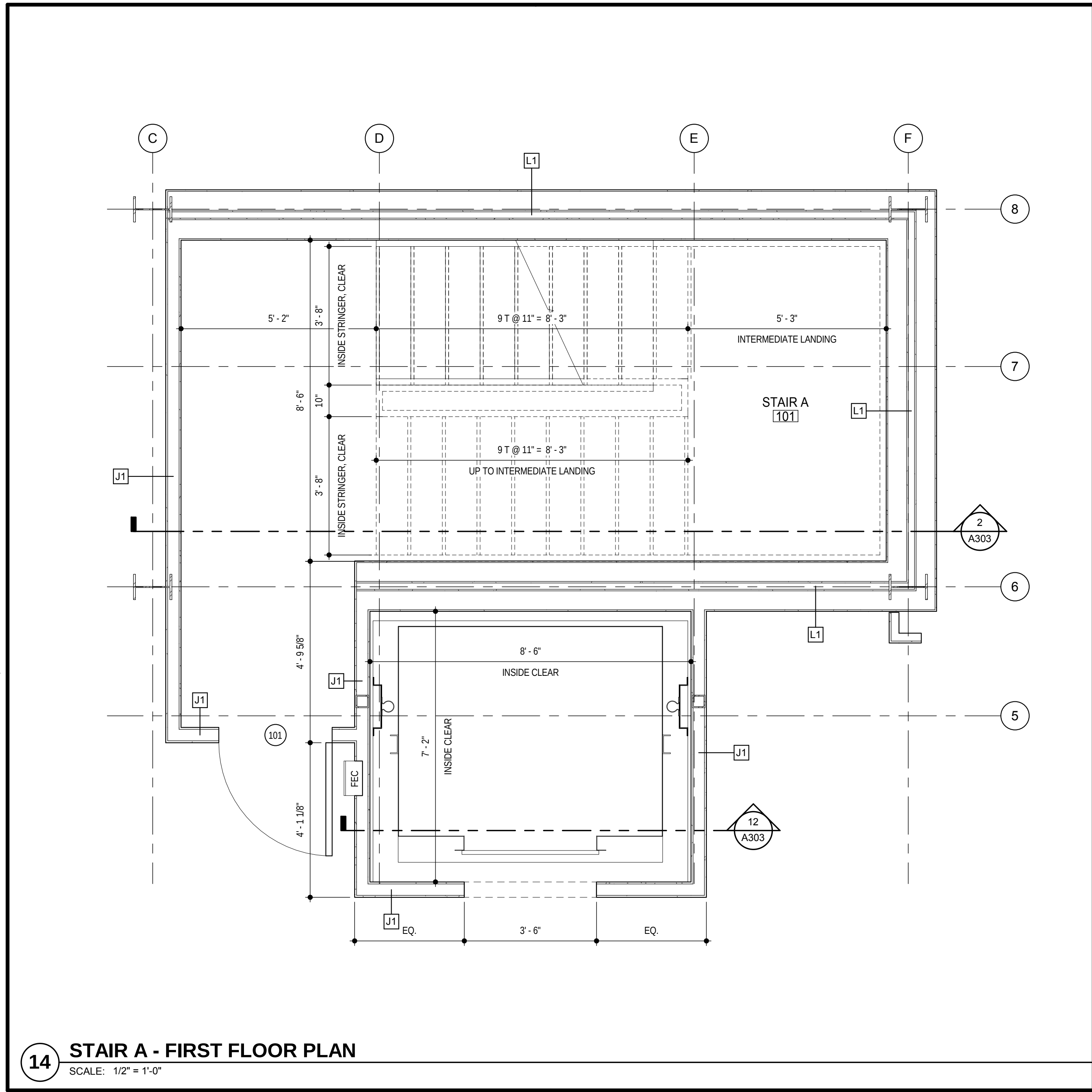
SHEET NO.

A120

REFLECTED CEILING PLAN



MATERIAL LEGEND	
CB-1	TILE BASE (TBD)
CT-1	TILE (TBD)
VWC	VINYL WALL COVERING (TBD)



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ELEVATIONS KEYED NOTES

1. PRE-FINISHED SHT. MTL. SCUPPER & DOWNSPOUT.
2. GAS METER; SEE MEP DESIGN/BUILD DRAWINGS.
3. ELECTRIC METER; SEE MEP DESIGN/BUILD DRAWINGS.
4. RECESSED EXTERIOR CAN LIGHTS; SEE REFLECTED CEILING PLAN (6/A201).
5. 1" EIFS REVEAL, ALIGN WITH EDGE OF WINDOW. SEE DETAIL 8/A011.
6. SPANDREL GLAZING, SHOWN WITH HATCH. (TYP. @ 3 LOCATIONS)

GENERAL NOTES

- A. ALL CONTROL JOINTS TO BE 1/2" IN WIDTH, TYPICAL.
B. PAINT ALL EXPOSED CONDUIT, PIPING, AND ELECTRICAL CABINETS ON EXTERIOR OF BUILDING TO MATCH WALL.

EXTERIOR FINISH MATERIAL LEGEND

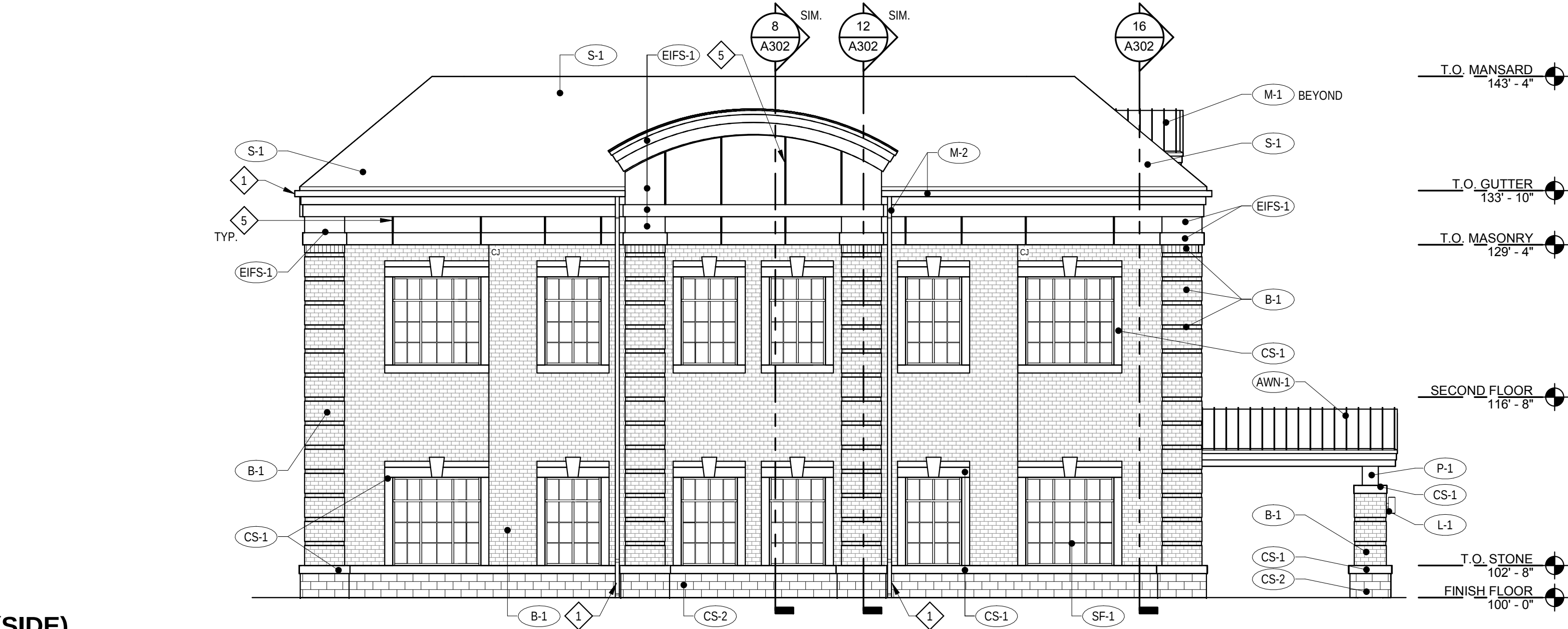
CODE	MATERIAL	TYPE / COLOR
AWN-1	CANOPY	LAWRENCE FABRICS & METAL STRUCTURES COLOR: MATCH M-1
B-1	BRICK	BASE BID: HEBRON "CASTLEWOOD" - CLOSURE SIZE ALT BID: ENHICOTT "BURGUNDY SANDS" - CLOSURE SIZE
CS-1	CAST STONE	CONTINENTAL CAST STONE COLOR: 1103
CS-2	DECORATIVE CAST STONE VENNER	ARRISCRAFT INTERNATIONAL COLOR: "ROCKED OAK RIDGE", 8" x 16" FACE, 4" THICK
EIFS-1	EIFS	DRYVIT, SANDPEPPLE TEXTURE COLOR: TO MATCH CS-1/CS-2
L-1	LIGHT FIXTURE	TBD
M-1	STANDING-SEAM METAL ROOF	UNA-CLAD COLOR: "DARK BRONZE"
M-2	SHEET MTL TRIM, GUTTERS, DOWNSPOUTS, ETC.	UNA-CLAD COLOR: "DARK BRONZE"
S-1	SLATE SHINGLE	BASE BID: GAF - CAMELOT & CAMELOT II, COLOR: TBD CERTAINTED - GRAND MANOR, COLOR: TBD ALT. BID: GAF - TRUSLATE, COLOR: TBD BRAVA SLATE TILE, COLOR: TBD
SF-1	ALUM. STOREFRONT	1" CLEAR LOW-E INSUL. GLASS IN SATIN BLACK ANODIZED ALUM. STOREFRONT

(T) = TEMPERED GLASS

CJ = CONTROL JOINT

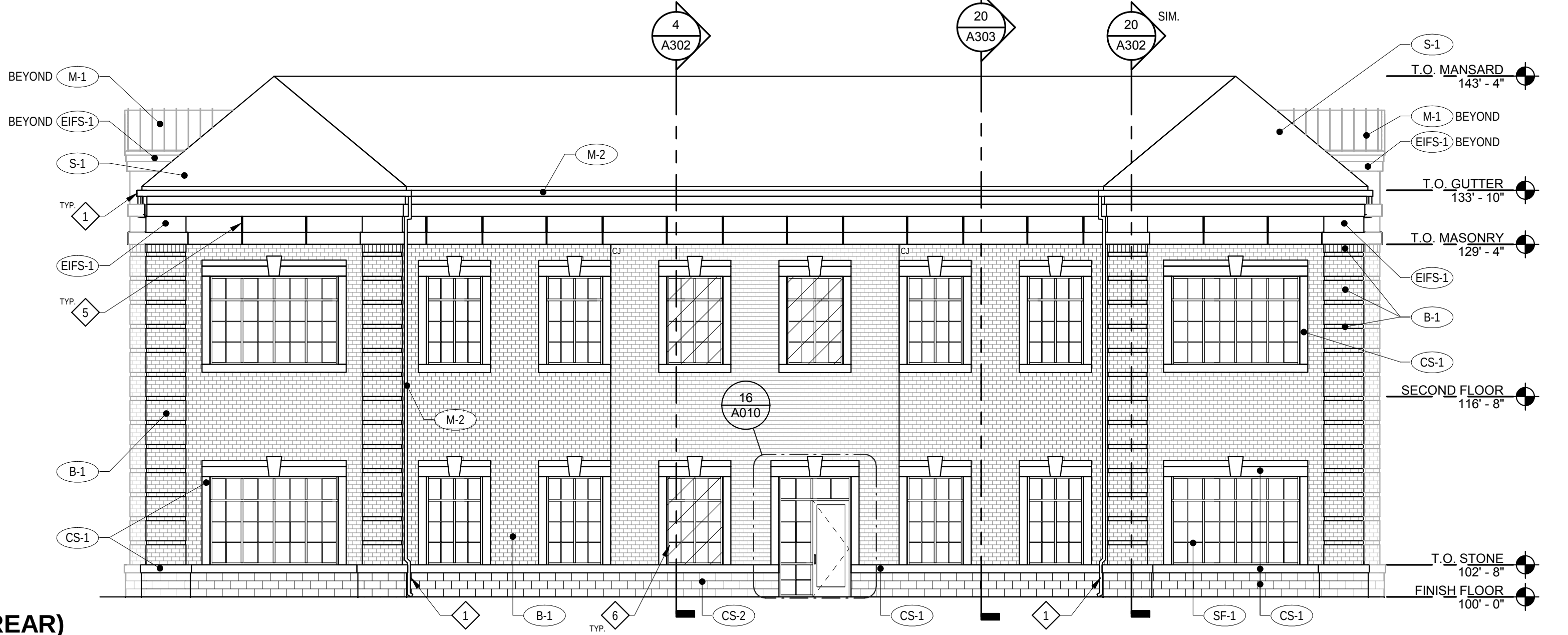
9 SOUTH ELEVATION (SIDE)

SCALE: 1/8" = 1'-0"



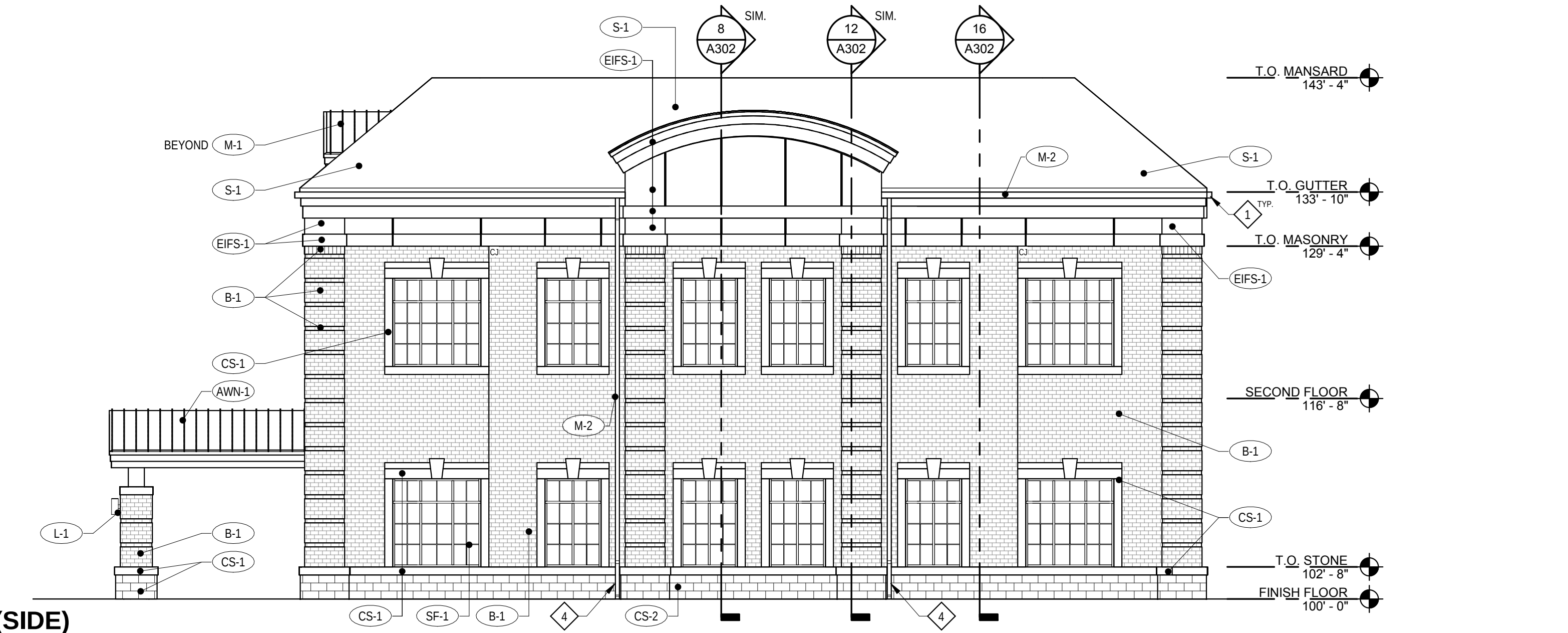
10 WEST ELEVATION (REAR)

SCALE: 1/8" = 1'-0"



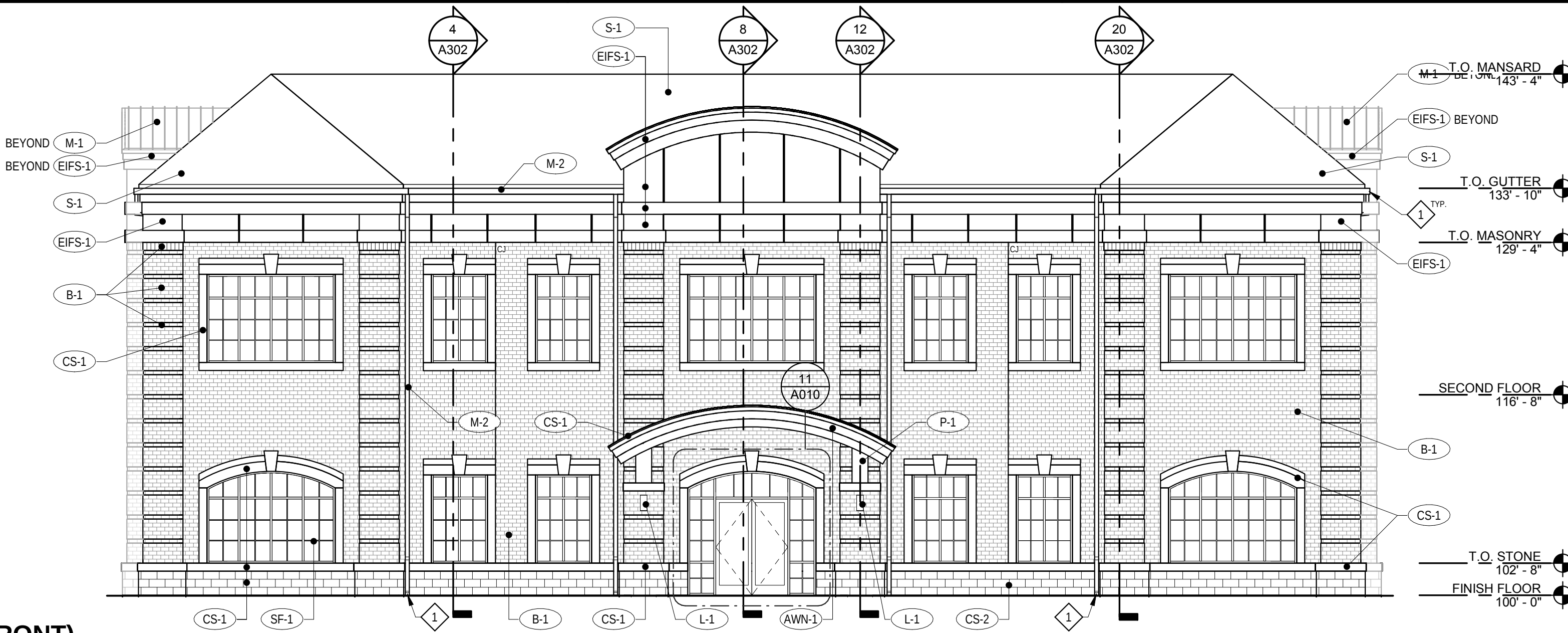
11 NORTH ELEVATION (SIDE)

SCALE: 1/8" = 1'-0"



12 EAST ELEVATION (FRONT)

SCALE: 1/8" = 1'-0"



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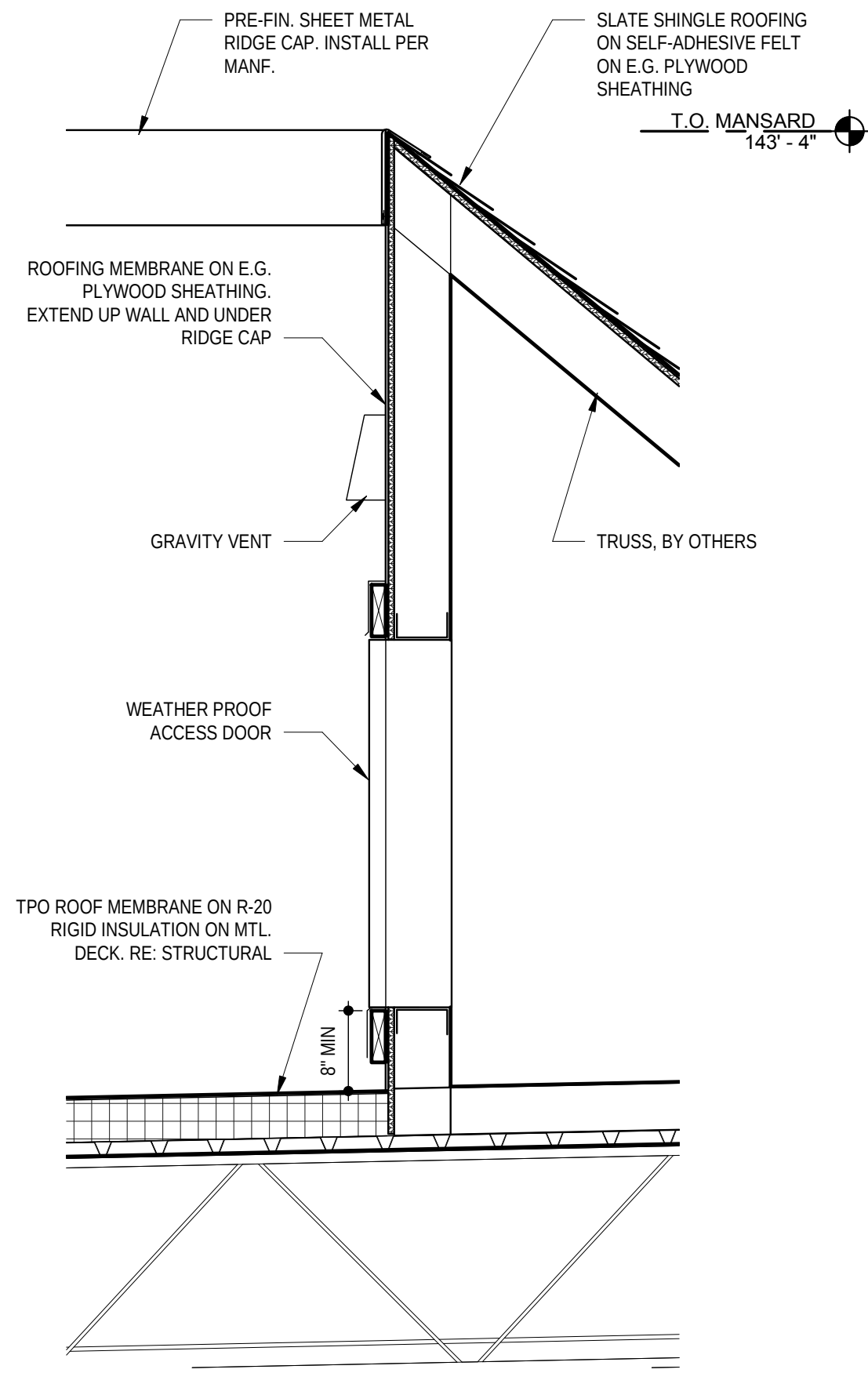
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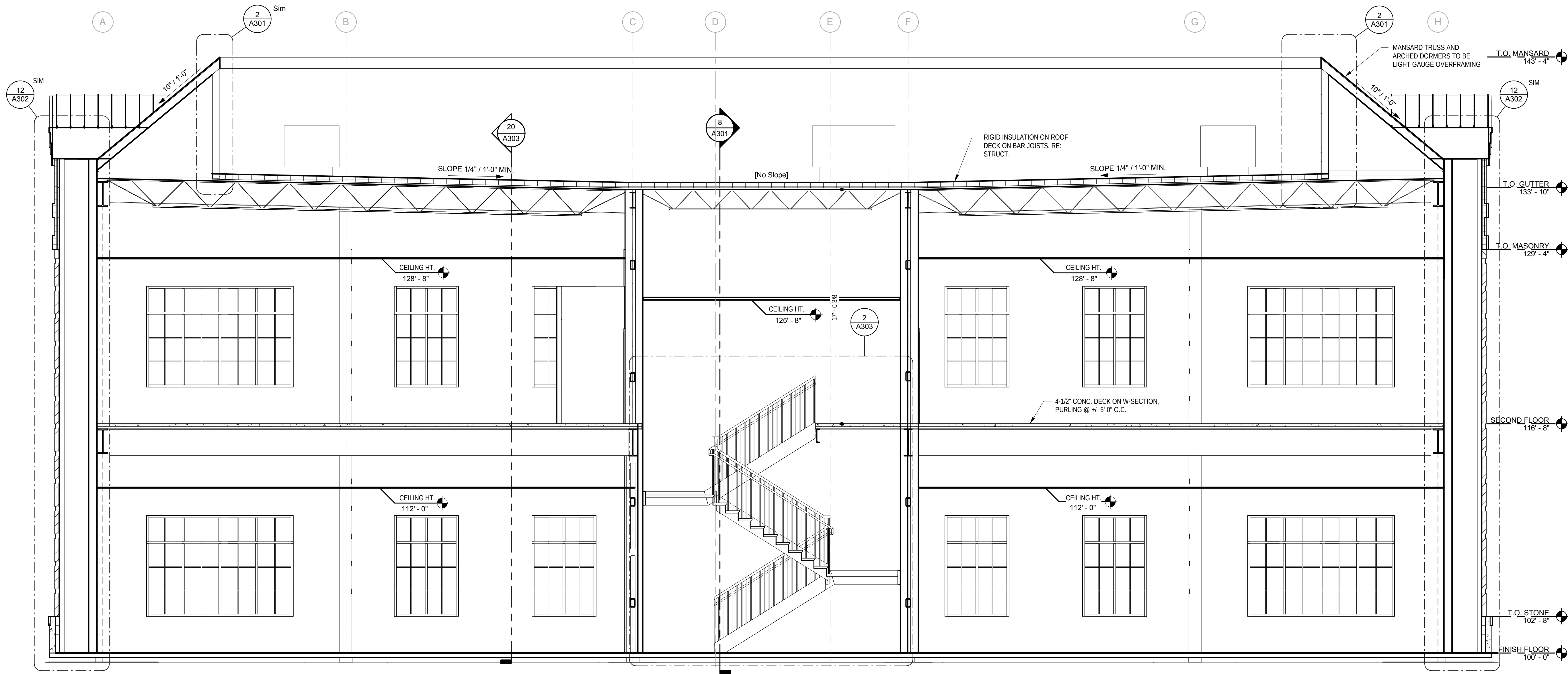
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A201

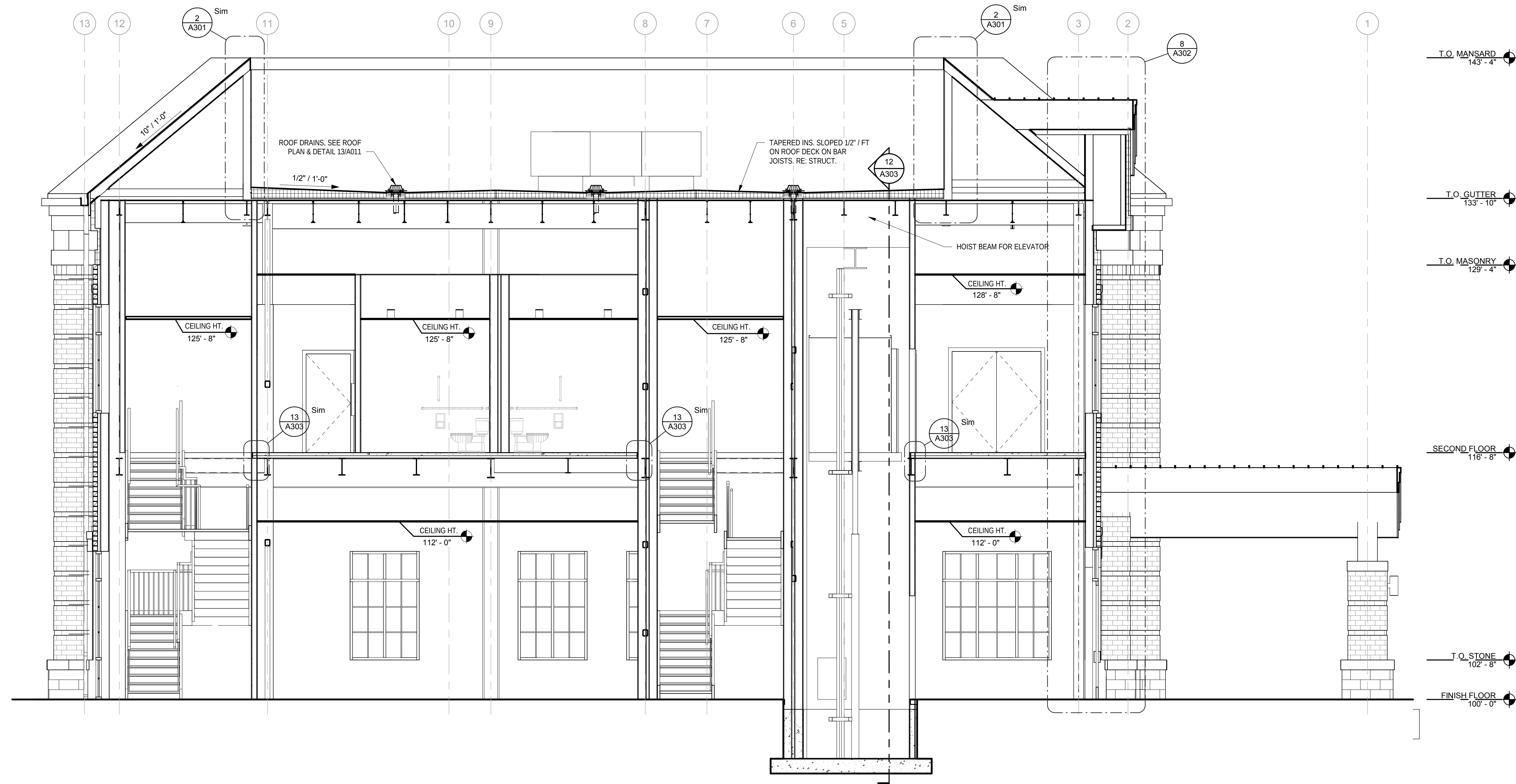
EXTERIOR ELEVATIONS



2 MANSARD ROOF DETAIL
SCALE: 3/4" = 1'-0"



6 NORTH / SOUTH BUILDING SECTION
SCALE: 1/4" = 1'-0"



8 EAST / WEST BUILDING SECTION
SCALE: 1/4" = 1'-0"

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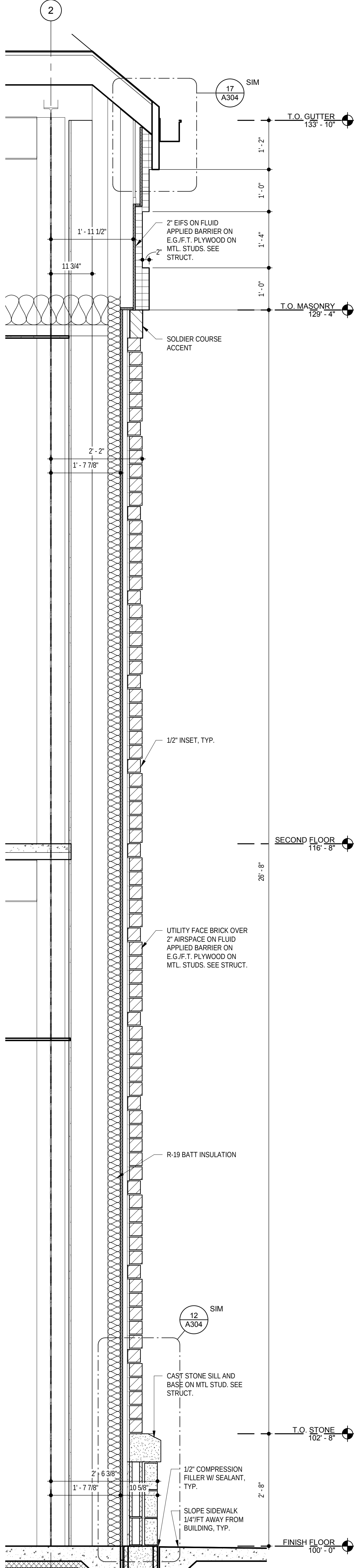
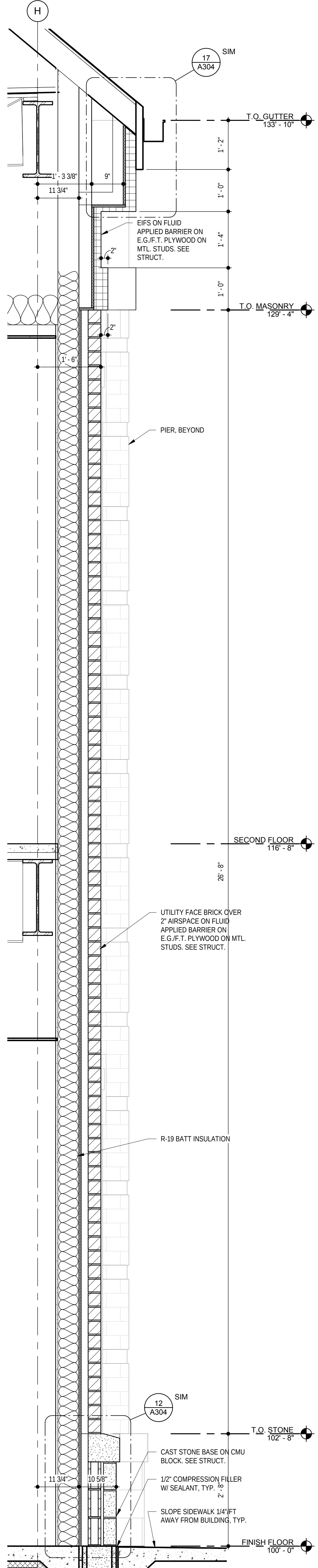
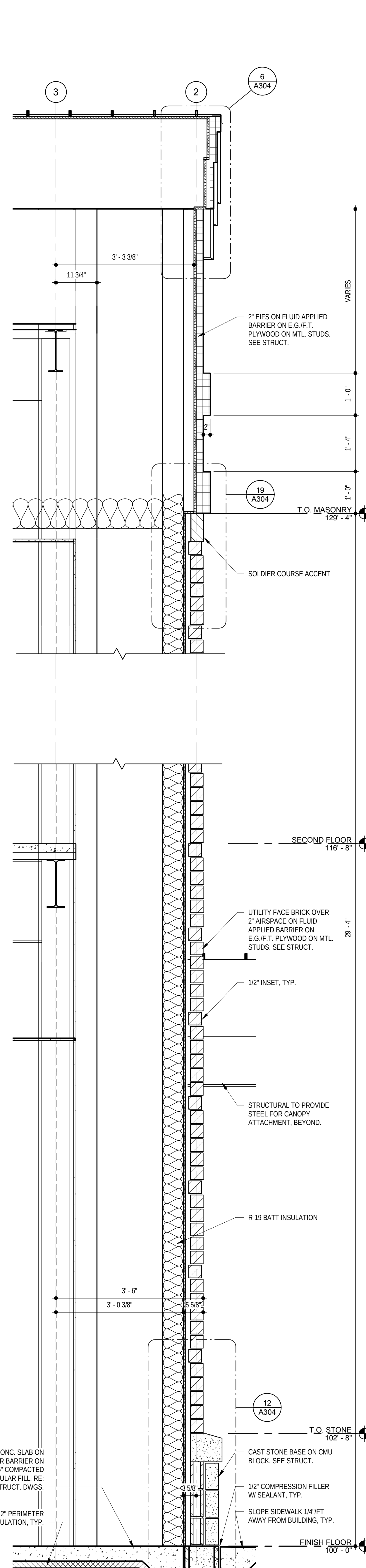
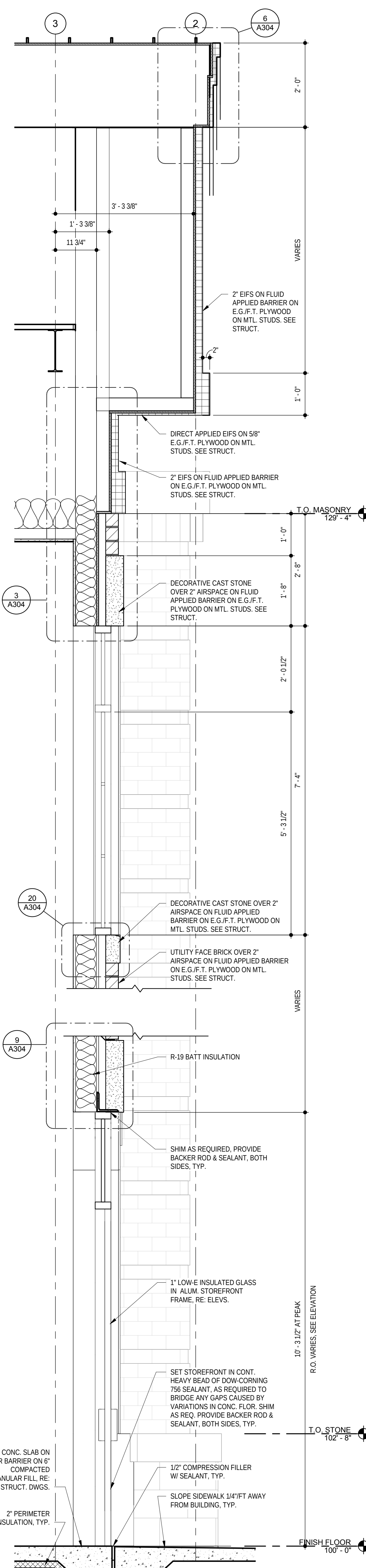
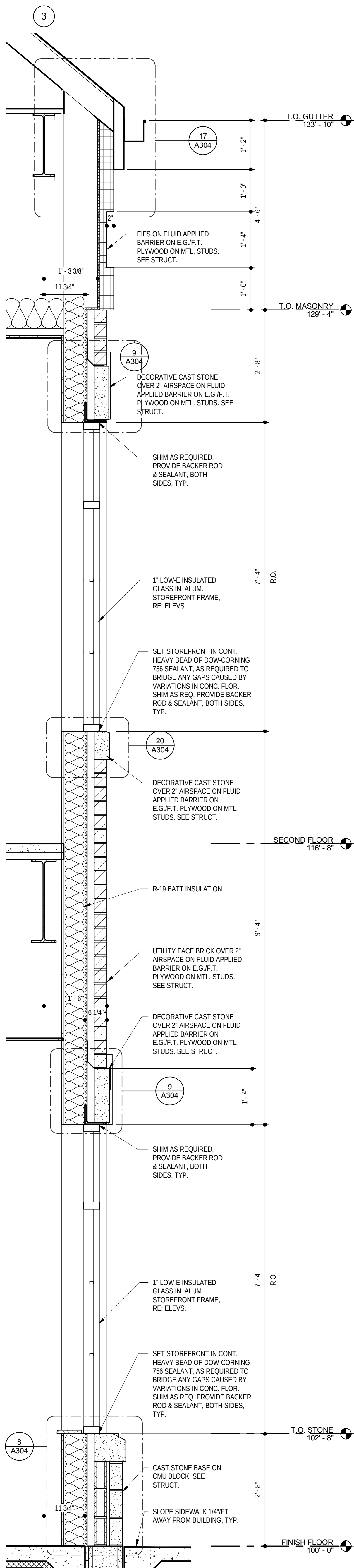
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BUILDING SECTIONS



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CIVIL ENGINEER	Stock & Associates
MECHANICAL ENGINEER	DESIGNBUILD
PLUMBING ENGINEER	DESIGNBUILD
ELECTRICAL ENGINEER	DESIGNBUILD

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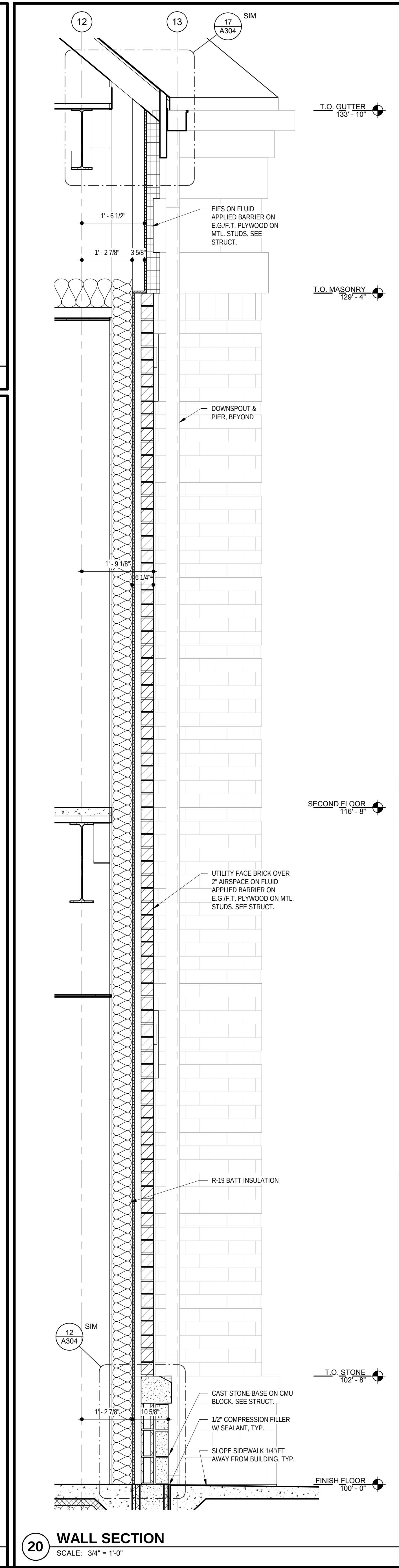
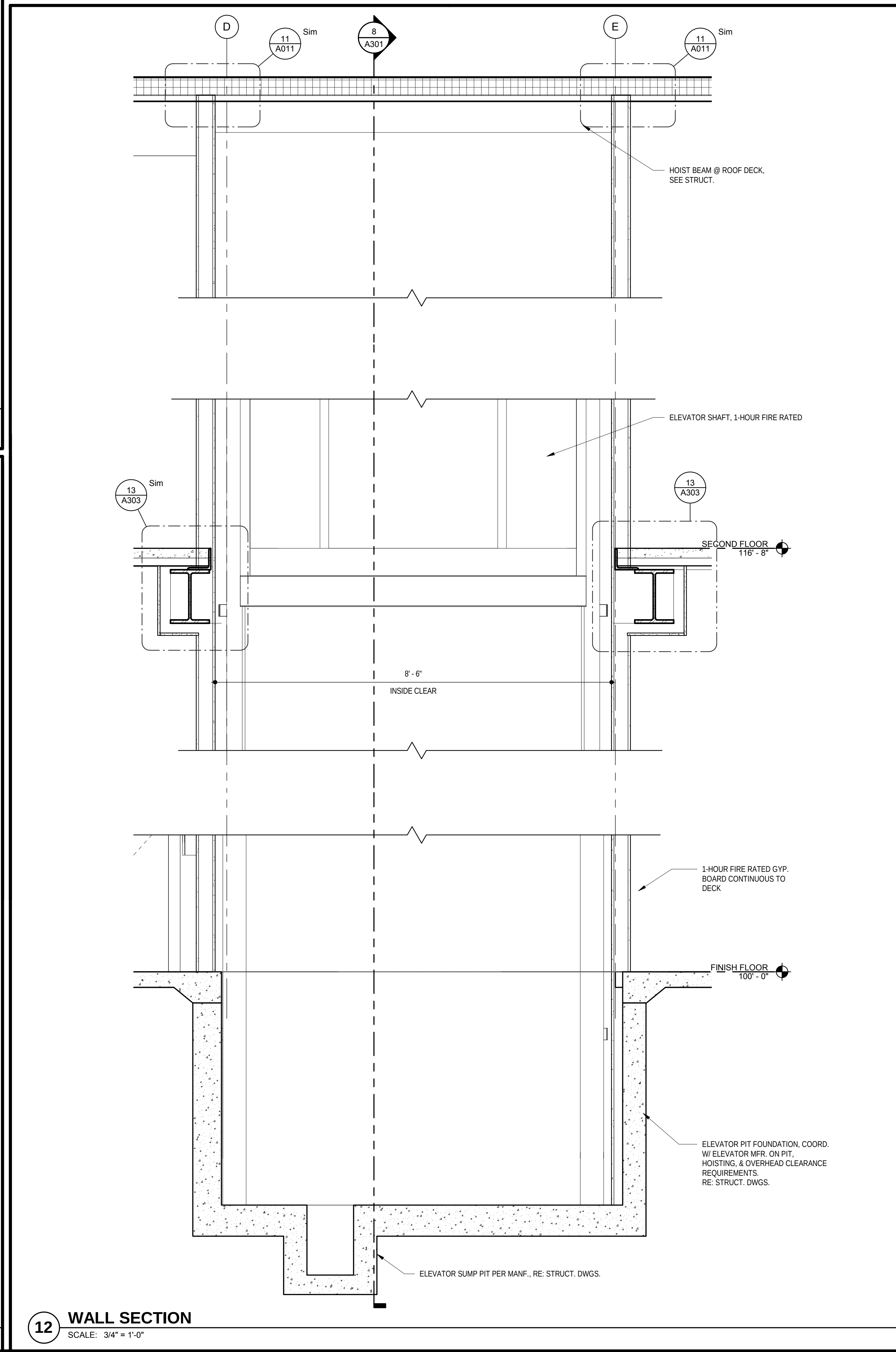
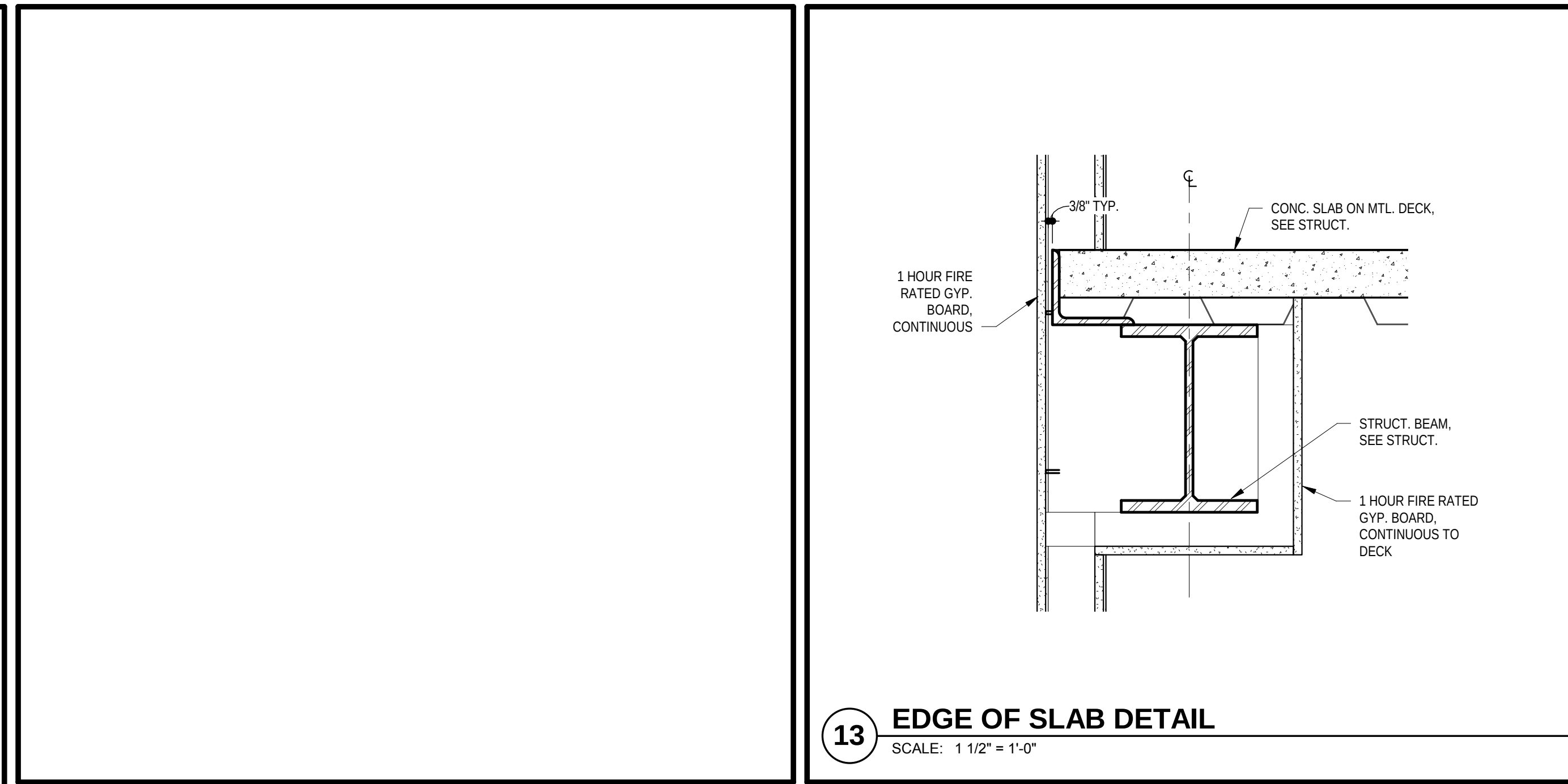
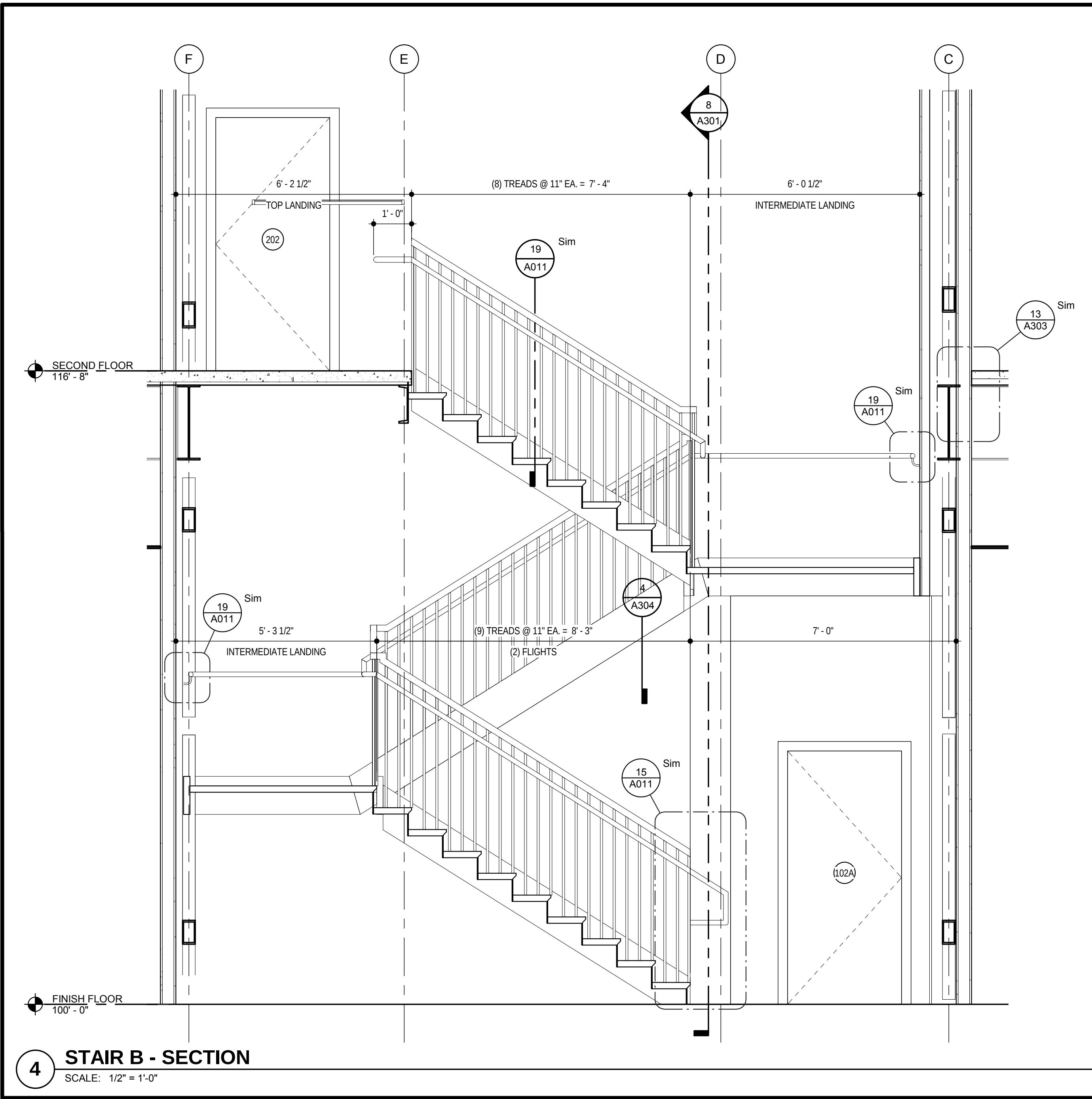
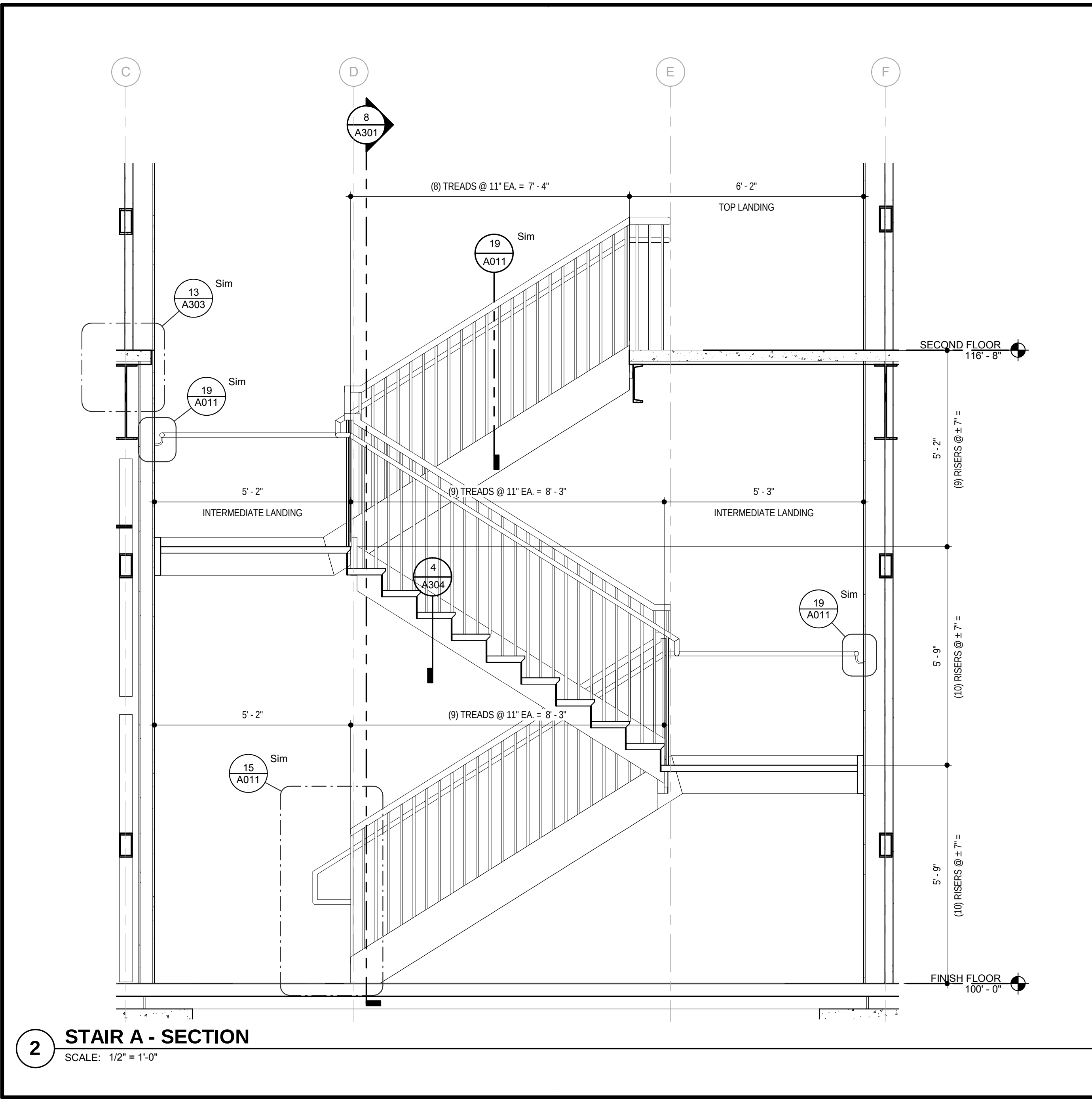
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A302
WALL SECTIONS



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CIVIL ENGINEER	Stock & Associates
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A303
WALL SECTIONS

3 ENLARGED SECTION
SCALE: 3" = 1'-0"

4 ENCLOSURE DETAIL @ STAIR B
SCALE: 3" = 1'-0"

6 SECTION @ BARREL ROOF
SCALE: 3" = 1'-0"

8 SECTION @ BASE
SCALE: 3" = 1'-0"

9 SECTION @ CAST STONE BAND
SCALE: 3" = 1'-0"

12 ENLARGED SECTION
SCALE: 3" = 1'-0"

17 SECTION @ MANSARD
SCALE: 1 1/2" = 1'-0"

19 ENLARGED SECTION
SCALE: 3" = 1'-0"

20 SECTION @ CAST STONE BAND
SCALE: 3" = 1'-0"

STRUCTURAL ABBREVIATIONS		STRUCTURAL ABBREVIATIONS	
#	POUND(S), NUMBER	HSS	HOLLOW STRUCTURAL SECTION
&	AND	INT	INTERIOR
(E)	EXISTING	JBRG	JOIST BEARING
@	AT	JG	JOIST GIRDER
AB	ANCHOR BOLT	JGBR/G	JOIST GIRDER BEARING
ADDL	ADDITIONAL	JST	JOIST
ALT	ALTERNATE	JT	JOINT
APPROX	APPROXIMATE(LY)	kip	1,000 POUNDS
ARCH	ARCHITECT(URAL)	ksi	kips PER SQUARE INCH
B/FTG	BOTTOM OF FOOTING	lb	POUND
BLDG	BUILDING	LLH	LONG LEG HORIZONTAL
BLKG	BLOCKING	LLV	LONG LEG VERTICAL
BM	BEAM	MAX	MAXIMUM
BMD	BOTTOM OF METAL DECK	MECH	MECHANICAL
BOT	BOTTOM	MEZZ	MEZZANINE
BP	BASE PLATE	MFR	MANUFACTURER
BRG	BEARING	MIN	MINIMUM
BTWN	BETWEEN	MISC	MISCELLANEOUS
C-C	CENTER TO CENTER	MTL	METAL
CANT	CANTILEVER(ED)	NTS	NOT TO SCALE
CFS	COLD-FORMED STEEL	oc	ON CENTER
CJP	CAST-IN-PLACE	OPNG	OPENING
CJ	CONTROL OR CONST JOINT	PAF	POWER-ACTUATED FASTENER
CL	CENTER LINE	PARA	PARAPET
CLR	CLEAR	PEMB	PRE-ENGINEERED METAL BUILDING (MANUFACTURER)
CMU	CONCRETE MASONRY UNIT	PIL	PILASTER
COL	COLUMN	PL	PLATE
CONC	CONCRETE	PLYWD	PLYWOOD
CONN	CONNECTION	psf	POUNDS PER SQUARE FOOT
CONST	CONSTRUCTION	PTDF(L)	PRESSURE TREATED DOUGLAS FIR (LARCH)
CONT	CONTINUOUS	PTSYP	PRESSURE TREATED SOUTHERN YELLOW PINE
CTR	CENTER	REINF	REINFORCED, REINFORCING
DBL	DOUBLE	REQD	REQUIRED
deg	DEGREE	SCHED	SCHEDULE
DF (L)	DOUGLAS FIR (LARCH)	do/do	SHEATHING
dia	DIAMETER	SIM	SIMILAR
DIM	DIMENSION	SPF	SPRUCE PINE FIR
DITTO	DIMENSION	STD	STANDARD
DWG	DRAWING	STL	STEEL
DWL	DOWEL	STRUC	STRUCTURAL
EA	EACH	SYP	SOUTHERN YELLOW PINE
EF	EACH FACE	T&B	TOP AND BOTTOM
EL	ELEVATION	T&G	TONGUE AND GROOVE
ELEV	ELEVATOR	TBRG	TRUSS BEARING
EMB	EMBEDMENT	T/CONC	TOP OF CONCRETE
EQ	EQUAL	T/FTG	TOP OF FOOTING
ETC	ET CETERA	T/PARA	TOP OF PARAPET
EW	EACH WAY	T/PIL	TOP OF PILASTER
EXP	EXPANSION	T/S	TOP OF SLAB
EXT	EXTERIOR	T/STL	TOP OF STEEL
FFN	FOUNDATION	TYP	TYPICAL
FD	FINISH FLOOR	UNO	UNLESS NOTED OTHERWISE
FIN	FINISH	USGS	US GEOLOGICAL SURVEY
FLR	FLOOR	VAR	VARIES
FRMG	FRAMING	VERT	VERTICAL
FTG	FOOTING	w/	WITH
FV	FIELD VERIFY	WHS	WELDED HEADED STUD(S)
ga	GAUGE	WP	WORK POINT
GALV	GALVANIZE(D)	WWR	WELDED WIRE REINFORCEMENT
GLB	GLUE-LAMINATED BEAM		
HGR	HANGER		
HK	HOOK		
HORIZ	HORIZONTAL		

BUILDING CODES AND STANDARDS USED FOR DESIGN

1.	INTERNATIONAL BUILDING CODE 2009 EDITION	
	OCCUPANCY CATEGORY: II	
DESIGN LOADS		
1.	DESIGN LOADS	100 psf
	2ND FLOOR LIVE LOAD:	60 psf
	2ND FLOOR DEAD LOAD:	20 psf
	ROOF LIVE LOAD:	20 psf
	ROOF DEAD LOAD:	20 psf
2.	SNOW LOAD DESIGN CRITERIA	
	SNOW LOAD IMPORTANCE FACTOR, I:	1.00
	GROUND SNOW LOAD, Pg:	20 psf
	FLAT ROOF SNOW LOAD, Pi:	14 psf
	THERMAL FACTOR, Ct:	1.00 (STL JST); 1.20 (MANSARD TRUSS)
	EXPOSURE FACTOR, Ce:	1.00
	FROST DEPTH:	2'-6"
3.	WIND LOAD DESIGN CRITERIA	
	WIND IMPORTANCE FACTOR, I:	1.00
	BASIC WIND SPEED:	90 MPH (3 SEC GUST)
	WIND EXPOSURE CATEGORY:	B
	GCo:	+/- 0.18
	POSITIVE WIND ROOF PRESSURES (ASD VALUES):	
	- ZONE 1 (STL JST)	10 psf
	- ZONE 2 & 3 (STL JST)	12 psf
	NET UPLIFT VALUES (ASD VALUES):	
	- ZONE 1 (STL JST)	9 psf
	- ZONE 2 (STL JST)	12 psf
	- ZONE 3 (STL JST)	12 psf
	- g' DIMENSION	7.5 ft
4.	SEISMIC LOAD DESIGN CRITERIA	
	SEISMIC IMPORTANCE FACTOR, I:	1.00
	SITE CLASS:	D
	SPECTRAL RESPONSE ACCELERATION:	Ss=0.540g, S1=0.180g
	SPECTRAL RESPONSE COEFFICIENTS:	Sds=0.492g, Sd1=0.250g
	SEISMIC DESIGN CATEGORY:	D
	BASIC SEISMIC-FORCE RESISTING SYSTEM:	D SPECIAL STEEL CONCENTRICALLY BRACED FRAMES/DUAL SYSTEM w/ INTERMEDIATE STEEL MOMENT FRAMES RESISTING MIN OF 25% SEISMIC FORCES
	SEISMIC RESPONSE COEFFICIENT, Cs:	0.082/0.062
	RESPONSE MODIFICATION FACTOR, R:	6/6
	SYSTEM OVER-STRENGTH FACTOR, OMEGAo:	2/2.5
	DEFLECTION AMPLIFICATION FACTOR, Cd:	2.0
	ANALYSIS PROCEDURE USED:	EQUIVALENT LATERAL FORCE

SHOP DRAWING NOTES

- SHOP DRAWINGS, UNLESS OTHERWISE NOTED, SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- PRIOR SUBMITTAL, THE CONTRACTOR AND ARCHITECT SHALL REVIEW THE SHOP DRAWINGS AND MAKE ANY CORRECTIONS REQUIRED. THE CONTRACTOR AND ARCHITECT SHALL STAMP AND SIGN THE DRAWINGS, INDICATING THAT THEY HAVE REVIEWED THEM, PRIOR TO SUBMITTAL TO ENGINEER.
- SHOP DRAWINGS SHALL BE FURNISHED FOR ALL STRUCTURAL COMPONENTS.
- STRUCTURAL DRAWINGS ARE THE SOLE PROPERTY OF AEDIFICA CASE ENGINEERING. REPRODUCTION OF STRUCTURAL DRAWINGS FOR USE IN SHOP DRAWING SUBMITTALS IS NOT ACCEPTABLE WITHOUT OUR WRITTEN AGREEMENT.
- SCHEDULE SHALL ALLOW A MINIMUM OF 2 WEEKS FROM RECEIPT OF SHOP DRAWINGS FOR AEDIFICA CASE ENGINEERING TO PROVIDE RESPONSE.

GENERAL REVIT NOTES

- FOR ARCHITECTURAL, MEP, & STRUCTURAL COORDINATION: MODELED ELEMENTS SHOWN ON STRUCTURAL DRAWINGS SUCH AS TRUSSES, OPEN-WEB JOISTS, AND JOIST GIRDERS, ARE NOT THE FINAL DESIGN AND ALL FINAL COORDINATION SHOULD BE DONE BY THE VARIOUS CONSTRUCTION TRADES PER SHOP DRAWINGS FOR THESE ELEMENTS OF THE STRUCTURE.

GENERAL STRUCTURAL NOTES

- THIS DRAWING SET IS TO BE VIEWED AS A WHOLE AND COORDINATED WITH ARCHITECTURAL, MECHANICAL, CIVIL, AND OTHER DISCIPLINES. ALL WORK PERTAINING TO A SPECIFIC CONTRACTOR MAY OR MAY NOT BE SHOWN ON THESE DRAWING SECTIONS. IT IS EACH SUBCONTRACTOR'S RESPONSIBILITY TO PREPARE HIS BID FROM A COMPLETE SET OF PLANS.
- THE CONTRACTOR SHALL FOLLOW WRITTEN DIMENSIONS ONLY. DO NOT SCALE DRAWINGS. DIMENSIONS NOT SHOWN ON PLAN TO BE COORDINATED WITH ARCHITECTURAL PLANS.
- ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY AT ANY SIMILAR SITUATION ELSEWHERE ON THE JOB, EXCEPT WHERE A DIFFERENT DETAIL OR SECTION IS SHOWN.
- THE STRUCTURE SHALL BE ADEQUATELY BRACED AND SHORED DURING ERECTION AGAINST WIND AND ERECTION LOADS. STRUCTURAL MEMBERS ARE DESIGNED FOR "IN-PLACE" LOADS ONLY.
- BRACE ALL BELOW GRADE WALLS UNTIL FLOOR STRUCTURE IS IN PLACE & CONCRETE OR PLYWOOD FLOOR DIAPHRAGM IS IN PLACE.
- THE GENERAL CONTRACTOR SHALL VERIFY ALL OPENING SIZES, PAD SIZES, AND LOCATIONS WITH THE RESPECTIVE CONTRACTORS.
- THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN CONSTRUCTION DOCUMENTS AND ACTUAL FIELD CONDITIONS.
- THE VARIOUS SUBCONTRACTORS ARE RESPONSIBLE FOR PLACING SLEEVES, OUTLET BOXES, ANCHORS, VENT OPENINGS, ETC. THAT MAY BE REQUIRED IN FOUNDATION WALLS. CONSTRUCTION MANAGER SHALL COORDINATE ALL PLACEMENT OF ITEMS IN FOUNDATION WALLS.
- SEE ARCHITECTURAL PLANS FOR ADDITIONAL DETAILS AND INFORMATION.
- ALL ELEVATIONS GIVEN ARE REFERENCED TO FINISHED FLOOR ELEVATIONS AT 100'-0", UNLESS SHOWN AS USGS ELEVATIONS.
- WHERE GENERAL NOTES OR TYPICAL DETAILS CONTRADICT INFORMATION PROVIDED IN BUILDING SECTIONS, THE BUILDING SECTIONS TAKE PRECEDENCE.
- ALL HOLES THROUGH CONSTRUCTION SHALL BE CORE DRILLED OR SAWCUT.
- ALL STAIR STRINGERS, LANDINGS, AND HANDRAILS TO BE DESIGNED AND FABRICATED BY STAIR FABRICATOR.
- WHERE INFORMATION PROVIDED IN THESE STRUCTURAL DRAWINGS CONTRADICTS INFORMATION PROVIDED IN BUILDING SPECIFICATIONS, THE SPECIFICATIONS SHALL TAKE PRECEDENCE.

DEFERRED SUBMITTALS

- THE FOLLOWING DESIGN ELEMENTS MUST BE SIGNED & SEALED BY A PROFESSIONAL ENGINEER (PE/SE) REGISTERED IN THE STATE WHERE THIS PROJECT IS LOCATED, AND SUBMITTED TO THE ENGINEER OF RECORD. DESIGNED DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND RECORD.
- STRUCTURAL STEEL CONNECTION CALCULATIONS AND SHOP FABRICATION DRAWINGS FOR CONNECTIONS.
 - STEEL JOIST CALCULATIONS AND FABRICATION DRAWINGS (INCLUDING ACCESSORIES).
 - LIGHT GAUGE COLD-FORMED STEEL FRAMING:
 - STUDS, JOISTS, HEADERS, AND CONNECTIONS NOT SHOWN ON DRAWINGS.
 - STRUCTURAL CALCULATIONS INCLUDING MEMBER SIZES, LAYOUT, SPAN, SPACING, DEFLECTION, AND TYPICAL & SPECIAL CONNECTIONS.
 - PRE-FABRICATED COLD-FORMED STEEL TRUSS CALCULATIONS, AND FABRICATION DRAWINGS INCLUDING:
 - ALL TRUSS-TO-TRUSS CONNECTIONS
 - ALL TRUSS-TO-WALL CONNECTIONS
 - PLAN AND DETAILS FOR THE LOCATIONS OF ALL ERECTION/TEMPORARY AND PERMANENT LATERAL AND DIAGONAL BRACING AND/OR BLOCKING.
 - FRAMING PLAN LAYOUT (DIMENSIONED AND TO SCALE)
 - IDENTITY OF THE COMPANY MANUFACTURING THE TRUSS
 - DESIGN LOADS
 - TRUSS SPACING
 - STEEL STAIR CALCULATIONS AND DRAWINGS FOR MEMBERS AND CONNECTIONS INCLUDING STRINGERS, LANDINGS, AND HANDRAIL MEMBERS AND CONNECTION DESIGN.
 - CANOPY STRUCTURAL STEEL DRAWINGS & CALCULATIONS FOR MEMBER SIZES & CONNECTIONS.

SPECIAL INSPECTIONS

- REFER TO THE "STATEMENT OF SPECIAL INSPECTIONS" FOR THE LIST OF ELEMENTS OF CONSTRUCTION THAT SHALL REQUIRE SPECIAL INSPECTION. THIS SHALL BE CONSIDERED A GUIDE, AND THE CONTRACTOR AND INSPECTOR SHALL REFER TO THE IBC FOR COMPLETE REQUIREMENTS, QUALIFICATIONS, EXCEPTIONS, AND SUBMITTALS. REFER TO IBC SECTION 1704 FOR 2003-2009 CODES, AND SECTION 1705 FOR 2012-2015 CODES. THE OWNER SHALL BE RESPONSIBLE FOR EMPLOYING THE SPECIAL INSPECTION AGENCY. ANY "OBSERVATIONS" BY THE EOR WILL NOT BE TO PERFORM SPECIAL INSPECTIONS AND SHALL NOT BE INTERPRETED AS SUCH.
- COPIES OF ALL INSPECTION REPORTS THAT REPORT COMPLIANCE SHALL BE SUBMITTED TO THE ARCHITECT OF RECORD, STRUCTURAL ENGINEER OF RECORD, AND BUILDING INSPECTOR WITHIN 7 CALENDAR DAYS OF COMPLETION OF THAT PORTION OF WORK. A MINIMUM OF ONE (1) PROGRESS REPORT PER MONTH FOR EACH TYPE OF CONSTRUCTION REQUIRING SPECIAL INSPECTION SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD.
- SPECIAL INSPECTOR SHALL INFORM ENGINEER OF RECORD IMMEDIATELY OF NON-COMPLIANCE WITH CONSTRUCTION DOCUMENTS OR APPROVED SUBMITTALS. CONTACT ENGINEER OF RECORD THE SAME DAY NON-COMPLIANCE IS DISCOVERED AND FOLLOW UP WITH AN OFFICIAL REPORT WITHIN 2 BUSINESS DAYS.
- THE SPECIAL INSPECTIONS IDENTIFIED ON THE PLANS ARE IN ADDITION TO, AND NOT A SUBSTITUTE FOR, THOSE INSPECTIONS REQUIRED TO BE PERFORMED BY A BUILDING INSPECTOR.
- SPECIAL INSPECTIONS ARE NOTED AS EITHER "CONTINUOUS" OR "PERIODIC". A "CONTINUOUS" INSPECTION REQUIRES THE PRESENCE OF A QUALIFIED INSPECTOR IN THE VICINITY OF THE WORK BEING PERFORMED FOR 100% OF THAT WORK. A "PERIODIC" INSPECTION REQUIRES PART-TIME OBSERVATION OF THE WORK BEING PERFORMED. THE INSPECTOR SHALL ALSO OBSERVE THE FINAL CONDITION OF THE WORK BEFORE IT IS CLOSED FROM VIEW.
- WHEN WORK IN MORE THAN ONE CATEGORY OF WORK REQUIRING SPECIAL INSPECTION IS TO BE PERFORMED SIMULTANEOUSLY, OR THE GEOGRAPHIC LOCATION OF THE WORK IS SUCH THAT IT CANNOT BE CONTINUOUSLY OBSERVED, IT SHALL BE THE RESPONSIBILITY OF THE AGENT TO EMPLOY A SUFFICIENT NUMBER OF SPECIAL INSPECTORS TO ASSURE THAT ALL WORK IS CONTINUOUSLY INSPECTED IN ACCORDANCE WITH THOSE PROVISIONS.

EXCAVATION AND EARTHWORK NOTES

- WATER LEVELS INDICATED ON THE BORING LOGS MAY BE SUBJECT TO SEASONAL AND/OR ANNUAL VARIATIONS. A DEWATERING SYSTEM OF SUFFICIENT CAPACITY SHALL BE INSTALLED AND OPERATED TO MAINTAIN THE CONSTRUCTION AREA FREE FROM WATER AT ALL TIMES.
- THE BEARING VALUE AND LATERAL EARTH PRESSURES OF THE SOILS IS PER REPORT BY: MIDWEST TESTING, DATED APRIL 4, 2018. THE FOUNDATION DESIGN IS BASED ON THE FOLLOWING NET ALLOWABLE BEARING AND LATERAL EARTH PRESSURES (ALLOWABLE BEARING PRESSURES MAY BE INCREASED BY 33 PERCENT FOR WIND AND SEISMIC LOADS):
 - SREAD FOOTINGS 3,500 psf
 - CONT. WALL FOOTINGS 3,500 psf
- ALL FOOTING EXCAVATIONS SHALL BE INSPECTED, PRIOR TO CONCRETE PLACEMENT, BY A SOILS ENGINEER TO VERIFY SUITABLE BEARING MATERIAL OF CAPACITY AS SPECIFIED.
- NOTIFY THE OWNER'S REPRESENTATIVE WHEN ADDITIONAL EXCAVATION IS REQUIRED TO REACH SUITABLE BEARING MATERIAL.
- THE SOILS ENGINEER SHALL CERTIFY IN WRITING THAT ALL FOUNDATIONS ARE PLACED ON SOIL WITH THE BEARING VALUE AS SPECIFIED.
- WITHIN THE EXCAVATION AREA OF FOUNDATIONS, ALL VEGETATION, TOPSOIL, PREVIOUSLY PLACED FILL AND UNSUITABLE SOILS SHALL BE REMOVED, ALL FOOTINGS TO BEAR ON VIRGIN SOIL OR PROPERLY PLACED AND COMPACTED ENGINEERED FILL.
- FOUNDATION DESIGN DOES NOT ACCOUNT FOR WINTER CONSTRUCTION. ANY UNENCLOSED/UNHEATED SPACES SHALL BE ADEQUATELY PROTECTED AGAINST FROST DURING WINTER CONSTRUCTION BY THE CONTRACTOR.
- IF ANY SOFT SPOTS OR AREAS QUESTIONABLE FOR ANY REASONS ARE ENCOUNTERED BY THE CONTRACTOR, ARCHITECT/ENGINEER SHALL BE NOTIFIED IMMEDIATELY SO THAT ANY REQUIRED ACTION MAY BE TAKEN PRIOR TO CONTINUATION OF CONSTRUCTION IN THAT AREA.

POST-INSTALLED ANCHOR NOTES

- POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER OF RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED ON THESE DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING, AT A MINIMUM, THE PERTINENT EQUIVALENT PERFORMANCE VALUES OF THE SPECIFIED PRODUCT USING THE BUILDING CODE.
- TYPICAL POST-INSTALLED ANCHORS IN CONCRETE AND CMU SHALL COMPLY WITH THE LATEST OF THEIR RESPECTIVE ICC EVALUATION REPORTS.
 - WHEN INSTALLING ANCHORS IN CONCRETE AND CMU, CONTRACTOR SHALL LOCATE EXISTING REINFORCING STEEL, CONDUITS, ETC, PRIOR TO DRILLING FOR ANCHORS. CONTRACTOR SHALL USE CARE AND CAUTION TO PREVENT DAMAGE TO EXISTING REINFORCING BARS.
 - CONTRACTOR SHALL PROVIDE 1" MINIMUM CLEARANCE BETWEEN EDGES OF ANY HOLES FOR POST-INSTALLED ANCHORS AND EXISTING REINFORCING STEEL.
 - CONTRACTOR SHALL PROVIDE INSPECTION AND TESTING AS REQUIRED PER THE "SPECIAL INSPECTIONS" SECTION OF THESE GENERAL STRUCTURAL NOTES.

CONCRETE NOTES

- ALL CONCRETE WORK INCLUDING FORMING, REINFORCING, MIXING, PLACING, AND CURING SHALL BE DONE IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE INCLUDING "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318, AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE", ACI 301 LATEST EDITIONS.
- IT SHALL BE THE RESPONSIBILITY OF THE MIX DESIGN SUPPLIER TO PROPORTION MIXES APPROPRIATELY TO REACH THE REQUIRED DESIGN STRENGTH NOTED, AND SHALL BE APPROPRIATE FOR THEIR INTENDED USE. ADMIXTURES ARE OPTIONAL. HOWEVER, AIR-ENTRAINING ADMIXTURES SHALL BE USED FOR CONCRETE EXPOSED TO THE EXTERIOR OR FREEZE-THAW CYCLES.
- CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR EACH INTENDED USE ON THE PROJECT FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD. CONTENTS OF THE MIX DESIGN SHALL COMPLY WITH, AND INCLUDE ALL INFORMATION REQUIRED BY, ACI 318, CHAPTER 5. THIS INCLUDES, BUT IS NOT LIMITED TO NUMBER OF TESTS AND AGE OF TESTS INCLUDED IN THE MIX DESIGN REPORT.
- ALL CONCRETE DENSITY SHALL BE NORMAL WEIGHT (145 pcf +/- 5) UNLESS OTHERWISE INDICATED. LIGHT WEIGHT CONCRETE SHALL BE 110 pcf +/- 5, UNO.
- FLY ASH ALLOWANCES:
 - 20% MAXIMUM BY WEIGHT IN FOOTINGS
 - 15% MAXIMUM BY WEIGHT IN SLABS
- COORDINATE CONCRETE WORK WITH THAT OF OTHER TRADES TO ALLOW FOR SETTING OF SLEEVES, ACCESSORIES, ETC.
- ALL REINFORCING STEEL, ANCHOR RODS, DOWELS, AND INSETS SHALL BE WELL-SECURED IN POSITION PRIOR TO PLACING CONCRETE.
- TEST CYLINDERS WILL BE REQUIRED (4 MINIMUM), AND RECORDS OF RESULTS SHALL BE SUBMITTED TO ENGINEER OF RECORD (1 AT 7 DAYS, AND 2 AT 28 DAYS). SLUMP TESTS ARE RECOMMENDED.
- CONSTRUCTION JOINTS IN CONCRETE INDICATED WITH A ROUGH, CLEAN SURFACE SHALL HAVE A 1/4" AVERAGE AMPLITUDE.
- ALL COLD JOINTS SHALL BE ROUGHENED AND CLEANED PRIOR TO PLACING CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE FOLLOWING:
 - (A) TOTAL AIR CONTENT LIMITS INCLUDE BOTH ENTRAINED AND ENTRAPPED AIR +/- 1 1/2%. "N" IN COLUMN INDICATES THE ADDITION OF ENTRAINED AIR IS NOT REQUIRED, BUT IS PERMITTED.

CONCRETE TABLE			
INTENDED USE	MINIMUM 28 DAY STRENGTH f'c	MAX WATER-CEMENT RATIO	TOTAL AIR LIMITS (MAX % RATIO) (A)
INTERIOR SLAB ON GRADE	4 ksi	0.50	N
FOOTINGS/FOUNDATION WALLS	4 ksi	0.48	6 (WHERE EXPOSED TO EXT.)
CONCRETE EXPOSED TO DEICERS	4 ksi	0.40	6
SLABS ON METAL DECK	3.5 ksi	0.50	-
ALL CONCRETE NOT OTHERWISE SPECIFIED	4 ksi	0.40	6

REINFORCING STEEL NOTES

- NON-WELDED STEEL BAR REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60. WELDED STEEL BAR REINFORCING SHALL CONFORM TO ASTM A706.
- WELDING OF REINFORCING STEEL SHALL BE PERFORMED BY A W.S. QUALIFIED WELDERS IN CONFORMANCE WITH A.W.S. D1.1 USING E60 ELECTRODES FOR ASTM A615 REBAR, AND E80 ELECTRODES FOR ASTM A706 REBAR UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- MINIMUM CONCRETE COVER FOR REINFORCING STEEL IN CAST-IN-PLACE (NON-PRESTRESSED) CONCRETE SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED ON THE DRAWINGS:
 - CONCRETE CAST AGAINST EARTH = 3"
 - CONCRETE EXPOSED TO WEATHER:
 - #6 BAR AND LARGER = 2"
 - #5 BAR AND SMALLER = 1 1/2"
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER (SLABS, WALLS, & JOISTS):
 - #14 BARS AND LARGER = 1 1/2"
 - #11 BARS AND SMALLER = 3/4"
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER (BEAMS & COLUMNS):
 - PRIMARY REINFORCEMENT, TIES, STIRRUPS, & SPIRALS = 1 1/2"
- ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE LATEST EDITION OF ACI315, DETAILS AND DETAILING OF CONCRETE REINFORCEMENT.
- LAP SPICE LENGTHS FOR BARS INSTALLED IN CONCRETE AND CMU SHALL BE IN ACCORDANCE WITH THE TABLE.

COMPRESSION LAP SPICE LENGTH IN CONCRETE NOTES

- VALUES IN TABLE ARE BASED ON 60 ksi OR 80 ksi REBAR. THERE SHALL BE NO ADJUSTMENT PERMITTED FOR REBAR EXCEEDING 80 ksi IN YIELD STRENGTH.
- MULTIPLY LENGTHS IN TABLE BY 1.33 FOR f'c LESS THAN 3,000 psi.
- WHERE BARS OF DIFFERENT SIZES ARE SPLICED, PROVIDE THE LAP LENGTH OF THE LARGER BAR.
- VALUES IN THE TABLE CAN BE MULTIPLIED BY 0.75 WHERE LAP OCCURS WITHIN A SPIRAL IN A SPIRALLY REINFORCED COLUMN, BUT SHALL NOT BE LESS THAN 12".
- REBAR IN ALL CONCRETE MEMBERS SHALL BE SPLICED IN ACCORDANCE WITH THE "TENSION LAP SPlice LENGTH" TABLE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.

COMPRESSION LAP SPICE LENGTH IN CONCRETE (INCHES) f'c = 3,000 psi OR GREATER TABLE

BAR SIZE	fy = 60 ksi	fy = 80 ksi
#3	12	18
#4	15	24
#5	19	30
#6	23	36
#7	27	42
#8	30	48
#9	34	55
#10	39	61
#11	43	68

TENSION LAP SPICE LENGTH IN CONCRETE NOTES

- FOR HORIZONTAL BARS, VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.3 WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE BAR.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.5 FOR EPOXY COATED BARS WITH CLEAR COVER LESS THAN 3 BAR DIAMETERS OR CLEAR SPACING LESS THAN 6 BAR DIAMETERS. MULTIPLY VALUES IN TABLE BY 1.2 FOR ALL OTHER EPOXY COATED BARS.
- VALUES IN TABLE NEED NOT TO BE MULTIPLIED BY MORE THAN 1.7 DUE TO THE INCREASE FROM NOTES 1 AND 2.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.33 WHERE LIGHT WEIGHT CONCRETE IS USED.
- LAP SPLICES IN TENSION ARE NOT PERMITTED FOR BAR LARGER THAN #11. A FULL MECHANICAL OR FULL WELDED SPlice SHALL DEVELOPE AT LEAST 1.25x of the BAR.
- WHERE CLEAR SPACING OF BARS BEING SPLICED IS AT LEAST 2 BAR DIAMETERS AND CLEAR COVER AT LEAST 1 BAR DIAMETER, USE CASE 1. FOR ALL OTHER BAR ARRANGEMENTS, USE CASE 2.
- VALUES IN THE TABLE ARE BASED ON 60ksi REBAR. FOR OTHER REBAR YIELD STRENGTHS, MULTIPLY VALUES IN THE TABLE BY THE SPECIFIED YIELD STRENGTH DIVIDED BY 60.
- WHERE BARS OF DIFFERENT SIZES ARE SPLICED, PROVIDED THE LAP LENGTH OF THE LARGER BAR.
- WELDED WIRE REINFORCEMENT (DEFORMED OR PLAIN WIRE) SHALL BE LAPPED ONE FULL MESH SQUARE PLUS 2 INCHES MINIMUM, BUT NOT LESS THAN 8 INCHES.
- REBAR IN ALL CONCRETE MEMBERS SHALL BE SPLICED IN ACCORDANCE WITH "TENSION LAP SPlice LENGTH" TABLE, UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.

TENSION LAP SPICE LENGTH IN CONCRETE (INCHES) - 60 KSI REBAR TABLE

f'c =	3,000psi	3,000psi	3,500psi	3,500psi	4,000psi	4,000psi	5,000psi	5,000psi
BAR SIZE	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	22	33	20	30	19	28	17	25
#4	29	43	27	40	25	37	23	34
#5	36	54	33	50	31	47	28	42
#6	43	65	40	60	37	56	34	50
#7	63	94	58	87	54	81	49	73
#8	72	107	66	99	62	93	56	83
#9	81	121	75	112	70	105	63	94
#10	91	136	84	126	79	118	71	106
#11	101	151	93	140	87	131	78	117

DEVELOPMENT LENGTH OF STANDARD HOOKS IN CONCRETE NOTES

- VALUES IN TABLE ARE BASED ON 60ksi REBAR. FOR OTHER REBAR YIELD STRENGTHS, MULTIPLY VALUES IN THE TABLE BY THE SPECIFIED YIELD STRENGTH DIVIDED BY 60.
- SEE ACI 318 SECTION 12.5 FOR ALLOWABLE REDUCTIONS IN DEVELOPMENT LENGTH. IT SHALL NOT BE LESS THAN 8 BAR DIAMETERS OR 6 INCHES.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.2 FOR EPOXY COATED BARS.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.33 WHERE LIGHT WEIGHT CONCRETE IS USED.
- HOOKEED BARS ARE NOT CONSIDERED EFFECTIVE IN DEVELOPING BARS IN COMPRESSION.

DEVELOPMENT LENGTH OF STANDARD HOOKS IN CONCRETE (INCHES) - 60 ksi REBAR TABLE

BAR SIZE	f'c = 3,000 psi	f'c = 3,500 psi	f'c = 4,000 psi	f'c = 5,000 psi
#3	9	8	8	7
#4	11	11	10	9
#5	14	13	12	11
#6	17	16	15	13
#7	20	18	17	15
#8	22	21	19	17
#9	25	23	22	20
#10	28	26	25	22
#11	31	29	27	24

REINFORCED MASONRY NOTES

- MASONRY CONSTRUCTION SHALL CONFORM TO THE APPLICABLE PORTIONS OF TMS 602.
- "SPECIFICATION FOR STRUCTURAL MASONRY" CONCRETE MASONRY UNITS SHALL BE CLASSIFIED AS NORMAL WEIGHT DENSITY AND CONFORM TO ASTM C90. THE MASONRY ASSEMBLY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH, f'm = 2,000 psi.
- GROUT IN ACCORDANCE WITH ASTM C476 MAY BE FINE OR COARSE, SELF-CONSOLIDATING OR CONVENTIONAL (AT CONTRACTOR'S OPTION), AND SHALL BE PROPORTIONED TO ACHIEVE THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF MASONRY. GROUT SHALL HAVE A DRY DENSITY OF [103/135] +/- 3pcf [NORMAL WEIGHT AGGREGATES IN GROUT SHALL COMPLY WITH ASTM C404/LIGHTWEIGHT AGGREGATES IN GROUT SHALL COMPLY WITH ASTM 530, LIGHT WEIGHT AGGREGATES FOR STRUCTURAL CONCRETE]. MORTAR SHALL COMPLY WITH PROPORTION SPECIFICATION REQUIREMENTS OF ASTM C270.
- ALL MASONRY WALLS SHALL HAVE LADDER TYPE HORIZONTAL JOINT REINFORCING CONSISTING OF GALVANIZED EXTRA HEAVY 220 LADDER MESH BY HOHMANN & BARNARD, INC OR EQUAL. LOCATE AT 16"oc UNLESS NOTED OTHERWISE ON PLAN AND/OR SECTIONS. VERTICAL REINFORCEMENT IS PER FOUNDATION PLAN.
- SUPPLY VERTICAL REINFORCING IN MINIMUM LENGTHS EQUAL TO 4'-0" PLUS LAP SPlice LENGTH PER TABLE.
- WALL CONSTRUCTION LIFTS FOR REINFORCING BARS AND INSULATION FILL SHALL BE PER ACI 530.
- TYPE "S" MORTAR IS REQUIRED FOR ALL WALLS UNLESS NOTED OTHERWISE.
- SEE ARCHITECTURAL PLANS FOR LOCATION AND DETAIL OF CONTROL JOINTS AND EXPANSION JOINTS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND DETAILS OF DOOR AND WINDOW OPENINGS FOR SPECIAL COURSING AND OTHER MASONRY DETAILS. THE INFORMATION SHOWN ON THE STRUCTURAL DRAWINGS IS INTENDED TO DEFINE THE STRUCTURAL REQUIREMENTS ONLY.
- ALL BOLTS, ANCHORS, ETC., INSERTED IN THE WALLS SHALL BE INSTALLED INTO THE VERTICAL WALL WITH MINIMUM EDGE DISTANCE FROM ANCHOR TO EDGE OF GROUTED PORTION OF CMU IN ALL DIRECTIONS AS NOTED ON DRAWINGS.
- REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, UNLESS NOTED ON DRAWINGS. REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706.
- WHEN A FOUNDATION DOWEL DOES NOT LINE UP WITH A VERTICAL BLOCK CORE, IT SHALL NOT BE SLOPED MORE THAN (ONE HORIZONTAL IN 6 VERTICAL), OR 10 DEGREES. DOWEL MAY BE GROUTED INTO CELL IN VERTICAL ALIGNMENT. EVEN THOUGH IT IS IN AN ADJACENT CELL TO THE VERTICAL WALL REINFORCING, AS LONG AS THE CENTER-TO-CENTER SPACE BETWEEN THE WALL REINFORCING AND THE DOWEL DOES NOT EXCEED 8 INCHES. DOWELS SHALL NOT BE BENT INTO ALIGNMENT AFTER CONCRETE HAS BEEN CAST.
- SPLICED REINFORCING SHALL BE LAPPED ACCORDING TO "MASONRY LAP SPlice LENGTH" TABLE. SPLICED BARS SHALL BE WIRED TOGETHER. CONTRACTOR MAY OPT TO STAGGER SPLICES.
- VERTICAL BARS SHALL BE HELD IN POSITION AT TOP AND BOTTOM AND AT INTERVALS NOT EXCEEDING 192 DIAMETERS OF THE REINFORCING.
- REINFORCING STEEL SHALL BE SECURELY IN PLACE AND INSPECTED BEFORE GROUTING STARTS.
- VERTICAL GROUTING MAY BE EITHER "LOW LIFT" OR "HIGH LIFT" AT

STEEL JOIST NOTES

- ALL STEEL JOISTS SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST STEEL JOIST INSTITUTE STANDARD SPECIFICATIONS. JOIST FABRICATOR SHALL BE A MEMBER OF THE SJI.
- BRIDGING FOR STEEL JOISTS SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST STEEL JOIST INSTITUTE STANDARD SPECIFICATIONS.
- PROVIDE BOTTOM CHORD CEILING EXTENSIONS AS SHOWN ON ARCHITECTURAL DRAWINGS OR AS NOTED OTHERWISE.
- HEADER ANGLES FOR STEEL JOISTS SHALL BE DESIGNED AND FURNISHED BY THE JOIST FABRICATOR AS NOTED ON THE DRAWINGS.
- ALL STEEL BAR JOISTS SHALL BE SPACED AND SIZED AS SHOWN ON PLANS.
- TOP AND BOTTOM CHORDS OF ALL JOISTS SHALL BE IN STRAIGHT ALIGNMENT BEFORE WELDING OR FINAL-BOLTING ANY BRIDGING IN PLACE.
- THE ENDS OF ALL BRIDGING TERMINATING AT CONCRETE OR MASONRY WALLS SHALL BE ANCHORED THERETO AT TOP AND BOTTOM CHORDS PER TYPICAL DETAILS.
- ALL BAR JOISTS AT COLUMN CENTERLINES (OR ADJACENT TO COLUMN CENTERLINES) TO HAVE BOTTOM CHORD EXTENDED TO COLUMN OR BEAM. DO NOT WELD UNLESS SPECIFICALLY NOTED AS SUCH.
- ALL STEEL JOISTS SHALL BE SHOP PAINTED WITH MANUFACTURER'S STANDARD SHOP PRIMER COMPLYING TO SSPC-PAINT 15.
- REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

STEEL FLOOR & ROOF DECK NOTES

- DECK SHALL SPAN A MINIMUM 3 SUPPORT SPACES. LOCATE JOINTS OVER SUPPORTING MEMBERS ONLY, AND LAP 2" MINIMUM.
- METAL DECK SHALL NOT BE INSTALLED UNTIL THE JOISTS HAVE BEEN ALIGNED, AND ALL BRACING AND BRIDGING IS INSTALLED.
- METAL DECK TO BE FINISHED AND INSTALLED IN ACCORDANCE WITH ALL CURRENT PROVISIONS, RECOMMENDED PRACTICES, AND STANDARDS OF THE STEEL DECK INSTITUTE.
- FURNISH AND INSTALL SHEET METAL CLOSURES, JOINT COVERS, CONCRETE STOPS AND OTHER ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
- DO NOT SUSPEND PIPES OR DUCTS DIRECTLY FROM DECK.
- METAL DECK SHALL COMPLY WITH THE REQUIREMENTS OF THE STEEL DECK INSTITUTE. SEE PLAN FOR TYPES AND GAUGES.
- DECKING MANUFACTURER SHALL COORDINATE SIZE AND LOCATIONS OF OPENINGS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
- ROOF DECK SHALL BE GALVANIZED WITH G60 COATING MINIMUM UNLESS NOTED OTHERWISE.
- METAL ROOF DECK HAS BEEN DESIGNED TO FUNCTION AS A DIAPHRAGM FOR THE TRANSMISSION OF LATERAL LOADS. ATTACH DECK UNITS TO EACH OTHER PER PLAN NOTES. CONNECT DECK UNITS TO EXTERIOR SUPPORTS AND ALL OTHER DECK BOUNDARIES PER PLAN NOTES. ALL METAL DECK SHALL BE FASTENED TO JOIST SUPPORTS AND AT SIDE LAPS PER PLAN NOTES AND TYPICAL DETAILS.

PRE-FABRICATED COLD-FORMED STEEL TRUSS NOTES

- DESIGN REQUIREMENTS:
 - DESCRIPTION OF DESIGN CRITERIA.
 - ENGINEERING ANALYSIS DEPICTING MEMBER STRESSES AND OVERALL TRUSS DEFLECTION.
 - TRUSS MEMBER SIZES, THICKNESS, AND CONNECTIONS AT TRUSS JOINTS.
 - TRUSS SUPPORT REACTIONS.
 - TOP CHORD, BOTTOM CHORD, AND WEB BRACING REQUIREMENTS.
 - BLOCKING TRUSSES AS REQUIRED.
- PERFORMANCE REQUIREMENTS:
 - CALCULATE STRUCTURAL CHARACTERISTICS OF COLD-FORMED STEEL TRUSS MEMBERS ACCORDING TO AMERICAN IRON AND STEEL INSTITUTE "NORTH AMERICAN SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
 - DESIGN, FABRICATE, AND ERECT COLD-FORMED STEEL TRUSSES TO WITHSTAND SPECIFIED DESIGN LOADS WITHIN LIMITS AND UNDER CONDITIONS REQUIRED PER TABLE.
- NO FIELD MODIFICATIONS OF TRUSSES ARE PERMITTED UNLESS FABRICATOR PROVIDES CALCULATIONS AND DRAWINGS DETAILING THE MODIFICATION. CALCULATIONS AND DRAWINGS SHALL BE SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.
- REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

PRE-FABRICATED COLD-FORMED STEEL TRUSSES - DESIGN CRITERIA TABLE	
TOP CHORD:	20 psf LIVE LOAD 10 psf DEAD LOAD SNOW LOAD/ WIND LOAD PER ROOF PLAN AND NOTES
BOTTOM CHORD:	0 psf LIVE LOAD 5 psf DEAD LOAD
WIND UPLIFT:	PER "DESIGN LOADS" ON THESE GENERAL NOTES & ROOF PLAN
TRUSS SPACING:	PER PLAN
CAMBER:	75 PERCENT OF DEAD LOAD (USE 5 PSF ONLY)
DEFLECTION LIMITS:	AS SHOWN BELOW
ROOF TRUSSES:	TOTAL LOAD = L/240 LIVE LOAD = L/360
LOCAL DEFLECTION LIMITS BETWEEN PANEL POINTS	AS SHOWN BELOW
TOP CHORD TOTAL LOAD:	L/180
TOP CHORD LIVE LOAD:	L/240
BOTTOM CHORD TOTAL LOAD:	L/240
BOTTOM CHORD LIVE LOAD:	L/360

STRUCTURAL STEEL NOTES

- FABRICATION AND ERECTION OF STRUCTURAL STEEL MEMBERS IS TO BE IN ACCORDANCE WITH "AISC CODE OF STANDARD PRACTICE", LATEST EDITION.
- IT IS THE RESPONSIBILITY OF THE STEEL FABRICATOR TO DESIGN THE CONNECTIONS. CONNECTIONS ARE TO BE IN ACCORDANCE WITH CURRENT AISC STANDARDS AND APPLICABLE GOVERNMENT CODES. ALL CONNECTIONS SHALL BE BOLTED OR WELDED AND SHALL DEVELOPE 60% OF THE ALLOWABLE UNIFORM LOAD TABULATED IN THE AISC "MANUAL OF STEEL CONSTRUCTION" FOR ALLOWABLE STRESS DESIGN, 10k (ASD), OR SHEAR REACTION SHOWN ON THE DRAWINGS, WHICHEVER IS GREATER. PROVIDE MINIMUM NUMBER OF ASTM F3125 GRADE A325 OR A490 BOLTS AS SHOWN IN THE "STRUCTURAL STEEL BOLTED CONNECTIONS" TABLE.
- ANCHOR RODS TO BE ASTM F1554, GRADE 36 FULLY THREADED RODS WITH PLATE WASHERS AND NUTS ON THE BOTTOM UNLESS NOTED OTHERWISE-SEE "TYPICAL ANCHOR BOLT" DETAIL.
- BOLT HOLES SHALL BE 1/16" OVERSIZE UNLESS OTHERWISE NOTED ON THE DRAWINGS. FIELD BURNING OF BOLT HOLES SHALL NOT BE PERMITTED.
- WELDING SHALL BE PERFORMED BY A.W.S. QUALIFIED WELDERS IN CONFORMANCE WITH A.W.S. D.11 USING E70 SERIES ELECTRODES UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- ALL STEEL SHALL BE SHOP PAINTED WITH A STANDARD ALKYD PRIMER (GRAY). FOR HARSH ENVIROMENTS USE A GRAY ZINC ORGANIC OR INORGANIC PRIMER.
- FABRICATE ALL BEAMS WITH THE MILL CAMBER UP.
- CONNECTION NOTATION IS AS FOLLOWS. SEE PLAN NOTES TO DETERMINE IF LOADS SHOWN ON PLAN/DETAILS ARE ALLOWABLE (ASD) OR ULTIMATE (LRFD):
 - AXIAL FORCE = P
 - SHEAR = V OR []
 - MOMENT = M
 - TORSION = T
- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS AND GRADES:
 - WIDE FLANGE = A992, fy = 50ksi
 - ANGLES, CHANNELS, PLATES, BARS, AND RODS = A36, fy = 36ksi
 - RECTANGULAR = A500 GRADE B, fy = 46ksi
 - ROUND HSS = A500 GRADE B, fy = 42ksi
 - STRUCTURAL PIPE = A53 GRADE B, fy = 35ksi
- REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

STRUCTURAL STEEL BOLTED CONNECTIONS TABLE	
NOMINAL MEMBER DEPTH	MINIMUM NUMBER OF BOLTS
8" - 10"	2
12" - 14"	3
16" - 18"	4
21" - 24"	5
27" OR DEEPER	6

COMPOSITE STEEL BEAM NOTES

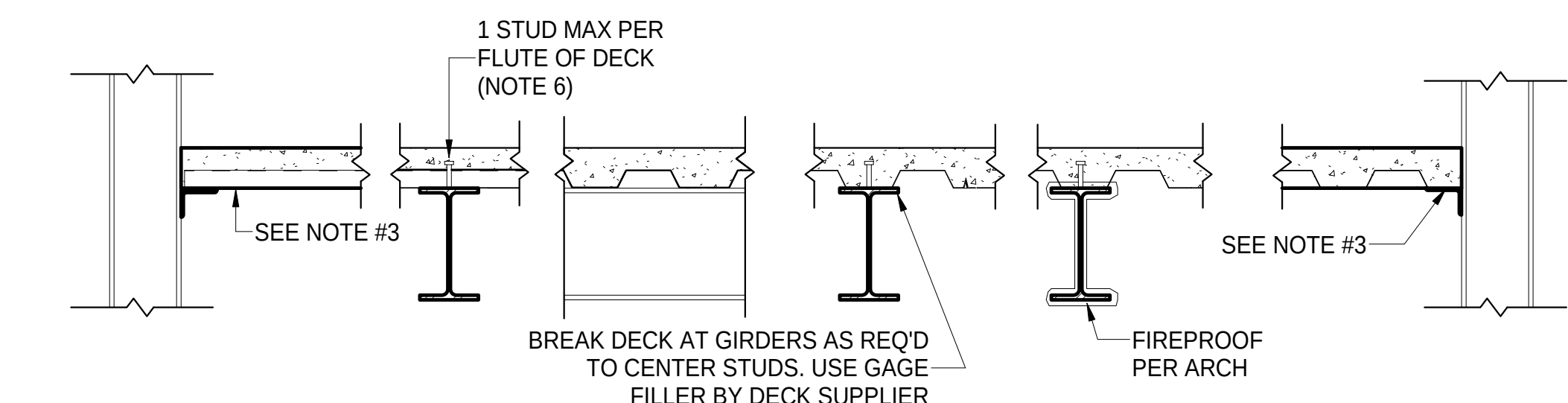
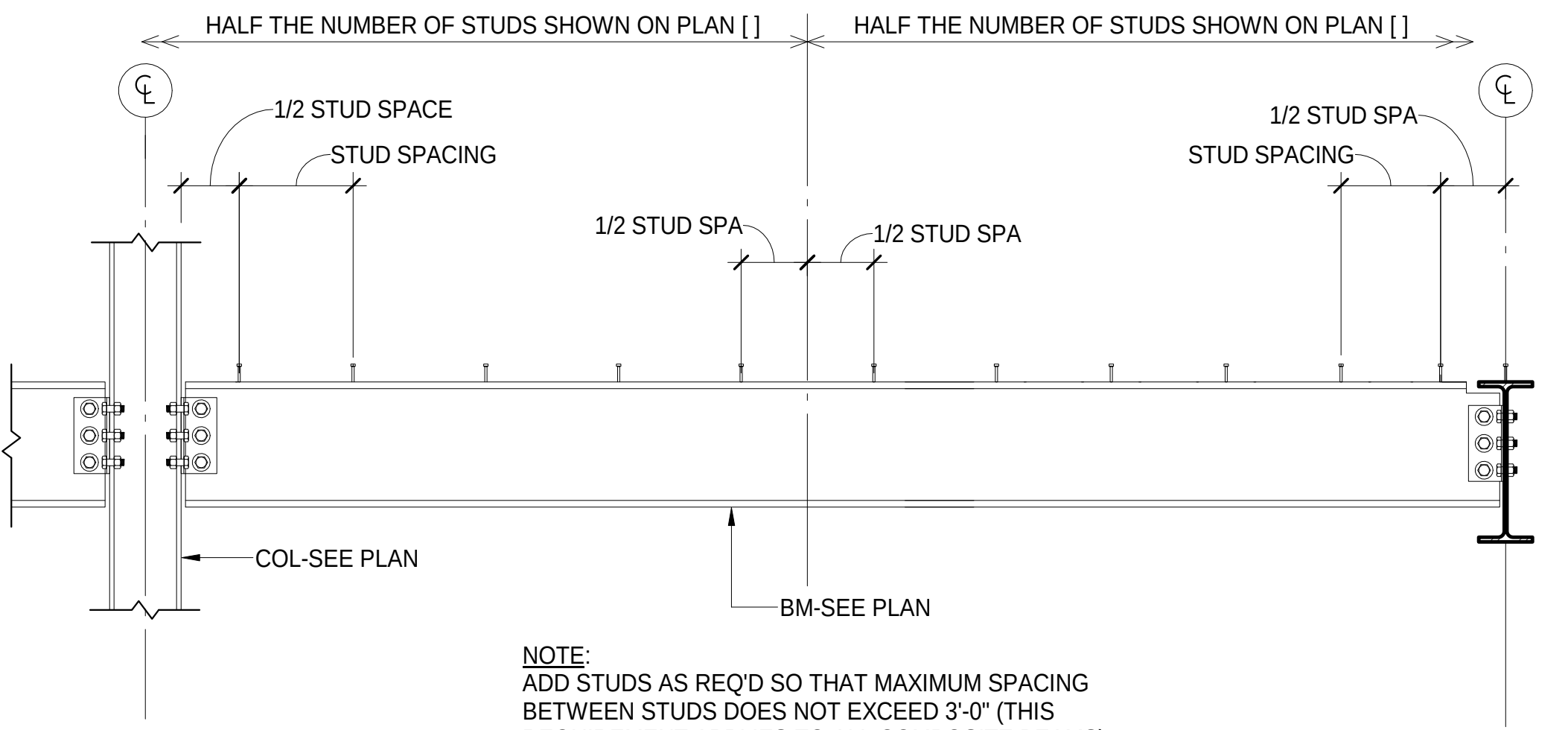
- SHEAR CONNECTORS SHALL BE HEADED STUDS MEETING ASTM A108, Fu=65ksi.
- SHEAR CONNECTOR TYPE, LENGTH, SHEAR VALUE, AND DETAILED LAYOUT SHALL BE SUBMITTED WITH THE COMPOSITE METAL DECK SHOP DRAWINGS PER COMPOSITE METAL DECK NOTES.
- MAXIMUM HEIGHT OF SHEAR CONNECTORS SHALL NOT EXCEED THE SLAB DEPTH MINUS 1/2".
- SPACING OF SHEAR CONNECTORS WITHIN ANY GIVEN LENGTH SHALL BE AS UNIFORM AS POSSIBLE.
- UNLESS NOTED OTHERWISE NON-COMPOSITE AND COMPOSITE BEAMS DO NOT REQUIRE TEMPORARY SHORING.
- NO PAINT SHALL BE APPLIED ON SHEAR CONNECTORS OR ON THE TOP SURFACE OF THE BEAMS THAT RECIEVE FIELD WELDED SHEAR CONNECTORS.

SPECIAL INSPECTIONS - CONCRETE TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
REINFORCEMENT	PERIODIC	INSPECT REINFORCEMENT (INCLUDING PRESTRESSING TENDONS) AND PLACEMENT; VERIFY CONFORMANCE WITH CONSTRUCTION DOCUMENTS, AND THAT BARS ARE FREE FROM MATERIALS THAT COULD PREVENT BOND, ARE ADEQUATELY LAPPED, SPICED, TIED, AND SUPPORTED
REINFORCEMENT	PERIODIC	VERIFY WELDABILITY OF REBAR OTHER THAN ASTM A 706; INSPECT SINGLE PASS FILLET WELDS NOT GREATER THAN 5/16"
REINFORCEMENT	CONTINUOUS	INSPECT ALL OTHER WELDS (SEE ALSO "STEEL" SPECIAL INSPECTIONS TABLE)
ANCHOR INSTALLATION	PERIODIC	INSPECT CAST-IN-PLACE ANCHORS AND BOLTS
ANCHOR INSTALLATION	PERIODIC	INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS NOT OTHERWISE SPECIFIED
ANCHOR INSTALLATION	CONTINUOUS	INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS PER THE REQUIREMENTS IN THEIR RESPECTIVE ICC-ES REPORTS
MIX DESIGN	PERIODIC	VERIFY USE OF APPROVED MIX DESIGN
SAMPLING AND TESTING	CONTINUOUS	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTING; PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF THE CONCRETE
CONCRETE PLACEMENT	PERIODIC	VERIFY MAINTENANCE OF CURING TEMPERATURE AND TECHNIQUES
CONCRETE PLACEMENT	PERIODIC	INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED
CONCRETE PLACEMENT	CONTINUOUS	CONCRETE PLACEMENT

SPECIAL INSPECTIONS - STEEL TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
MATERIAL VERIFICATION	PERIODIC	HIGH STRENGTH BOLTS, NUTS, AND WASHERS: REVIEW MANUFACTURER'S CERTIFICATE OF COMPLIANCE; IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE CONSTRUCTION DOCUMENTS
MATERIAL VERIFICATION	PERIODIC	STRUCTURAL STEEL: REVIEW MANUFACTURER'S CERTIFIED MILL TEST REPORTS; IDENTIFICATION MARKINGS ON STEEL SHAPES TO CONFORM TO AISC STANDARDS SPECIFIED IN THE CONSTRUCTION DOCUMENTS
MATERIAL VERIFICATION	PERIODIC	WELD FILLER MATERIALS: REVIEW MANUFACTURER'S CERTIFICATE OF COMPLIANCE; IDENTIFICATION MARKINGS TO CONFORM WITH AWS SPECIFICATIONS IN THE CONSTRUCTION DOCUMENTS
MATERIAL VERIFICATION	PERIODIC	COLD-FORMED STEEL DECK: REVIEW MANUFACTURER'S CERTIFIED TEST REPORTS; IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE CONSTRUCTION DOCUMENTS
HIGH-STRENGTH BOLTING	PERIODIC	BEARING-TYPE CONNECTIONS: VERIFY BOLTS, NUTS, WASHERS, PAINT, INSTALLATION, AND TIGHTENING CONFORM TO THEIR RESPECTIVE STANDARDS
WELDING	PERIODIC	SINGLE PASS FILLET WELDS NOT GREATER THAN 5/16"
WELDING	PERIODIC	VERIFY WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706; ALL REINFORCING STEEL NOT REQUIRING CONTINUOUS INSPECTION
WELDING	CONTINUOUS	COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS; MULTIPASS FILLET WELDS; SINGLE PASS FILLET WELDS > 5/16"
STRUCTURAL DETAILS	PERIODIC	INSPECT STEEL FRAME FOR COMPLIANCE WITH CONSTRUCTION DOCUMENTS FOR MEMBER SIZES AND LOCATIONS, BRACING, AND CONNECTIONS
METAL DECK	PERIODIC	INSPECT PUDDLE WELDING, SCREW ATTACHMENTS, AND SIDELAP FASTENING OF ROOF AND FLOOR DECK
OPEN WEB STEEL JOISTS	PERIODIC	INSPECT JOIST AND JOIST GIRDERS FOR WELDED OR BOLTED END CONNECTIONS; HORIZONTAL AND DIAGONAL BRIDGING; BRIDGING THAT DIFFERS FROM SJI SPECIFICATIONS

SPECIAL INSPECTIONS - SOILS AND FOUNDATIONS TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
SOILS	PERIODIC	VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY; VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL; PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS; PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY
SOILS	CONTINUOUS	VERIFY USE OF PROPER MATERIALS, DENSITIES, LIFT THICKNESSES, AND COMPACTION OF FILL; VERIFY MATERIALS AND PROCEDURES COMPLY WITH THE GEOTECHNICAL REPORT

SPECIAL INSPECTIONS - OFF-SITE FABRICATION (INCLUDING PRE-MANUFACTURED WOOD STRUCTURAL ELEMENTS AND ASSEMBLIES, AND STEEL FABRICATING)		
ITEM	INSPECTION FREQUENCY	SCOPE
FABRICATION AND IMPLEMENTATION PROCEDURES	PERIODIC	VERIFY THAT FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR INSPECTION CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS; REVIEW PROCEDURES FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE CODE REQUIREMENTS FOR THE FABRICATOR'S SCOPE OF WORK
NOTE	-	SPECIAL INSPECTION FOR OFF-SITE FABRICATION IS NOT REQUIRED FOR FABRICATORS APPROVED BY THE BUILDING OFFICIAL IN ACCORDANCE WITH THE CODE



PERPENDICULAR

NOTES:

1. W16 x 36 [38]

2. ATTACHMENT OF STEEL DECK

3. DECK SUPPORT AT STEEL COLUMN:

4. CONTINUITY OF DECK:

5. BEARING OF DECK:

6. SPACING OF STUDS:

7. DEFLECTION OF DECK SLAB:

8. COMPOSITE STUD SIZES:

[XX] INDICATES NUMBER OF END WELDED STUDS EQUALLY SPACED ON TOP FLANGE OF BEAM. COMPOSITE BEAM IS DESIGNED UNSHORED.

AT EACH SUPPORT & SIDELAPS PER PLAN NOTES. STUD WELDING THROUGH DECKING CAN BE CONSIDERED AS ONE ATTACHMENT. DO NOT PRIME TOP FLANGE OF STEEL BEAMS.

USE 3 1/2" x 3 1/2" x 16 ga ANGLE WELDED AT PERIMETER OF STEEL COLUMN

MINIMUM 2 SPAN CONTINUOUS - UNSHORED.

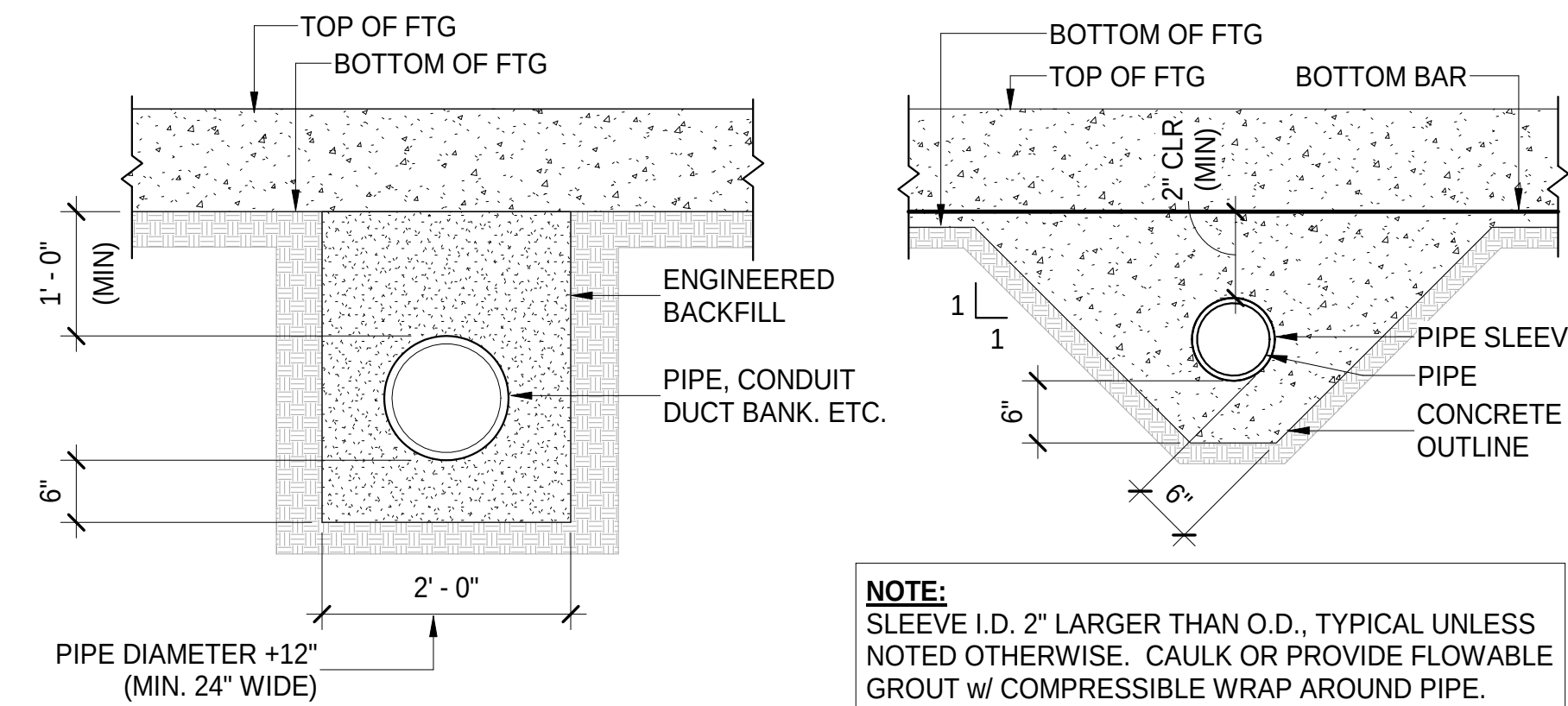
MINIMUM 3" AT ENDS BEARING ON CONCRETE AND 2" ON STEEL.

MINIMUM SPACING FOR STUDS IS 12"oc; MAXIMUM SPACING IS 36"oc DO NOT PLACE STUDS ON CANTILEVER SPAN OF BEAM.

FLOOR FRAMING WILL DEFLECT UNDER WEIGHT OF WET CONCRETE. PROVIDE ALLOWANCE FOR FLOOR LEVELING AS NEEDED AFTER CONCRETE HAS CURED.

ALL COMPOSITE STUDS ARE 3/4" dia. USE 3" STUDS FOR 1 1/2" DECK, 3 1/2" STUDS FOR 2" DECK, AND 5 1/2" STUDS FOR 3" DECK.

C TYPICAL COMPOSITE SLAB CONSTRUCTION DETAIL
S1.2 N.T.S.

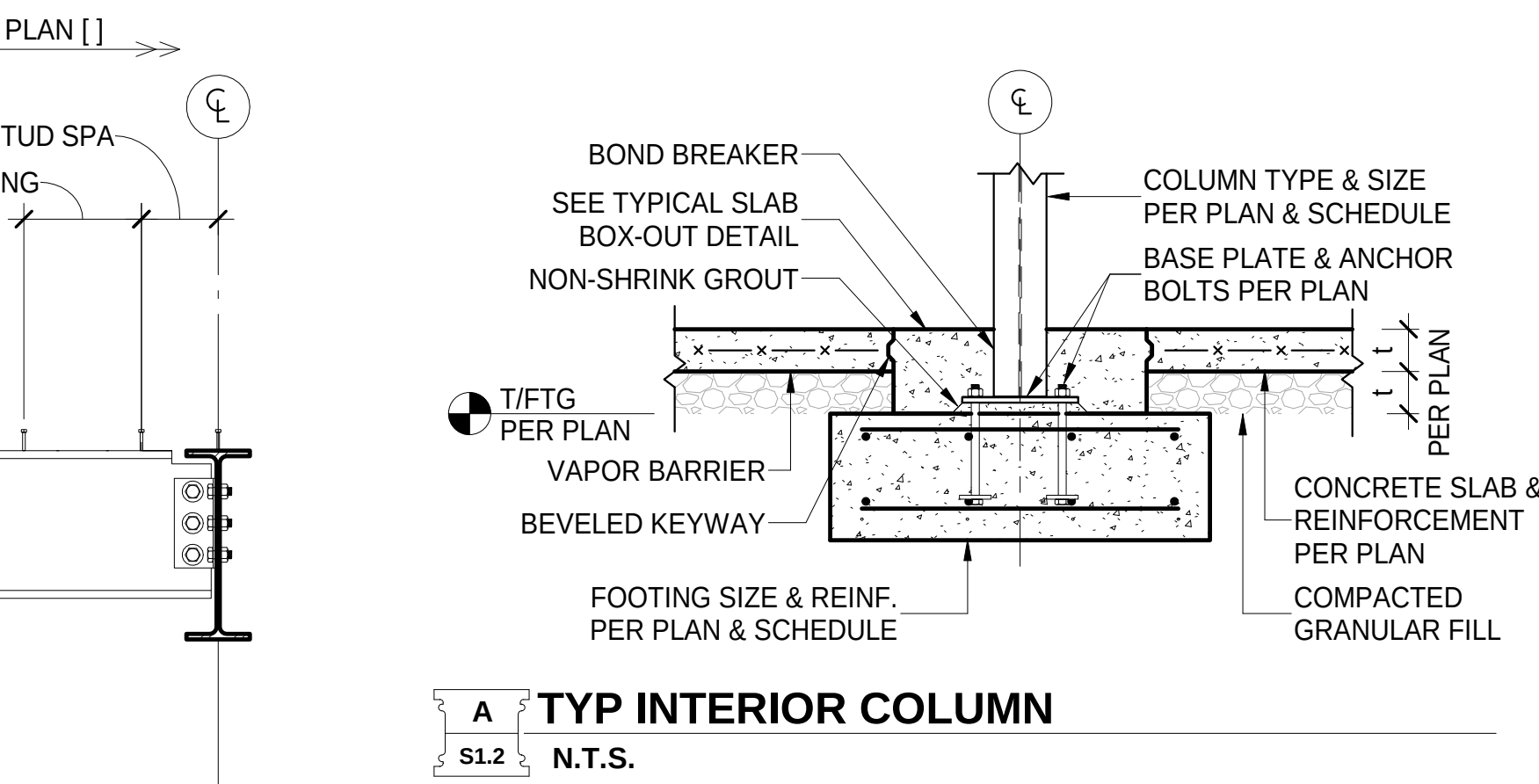


BELOW BOTTOM OF FOOTING

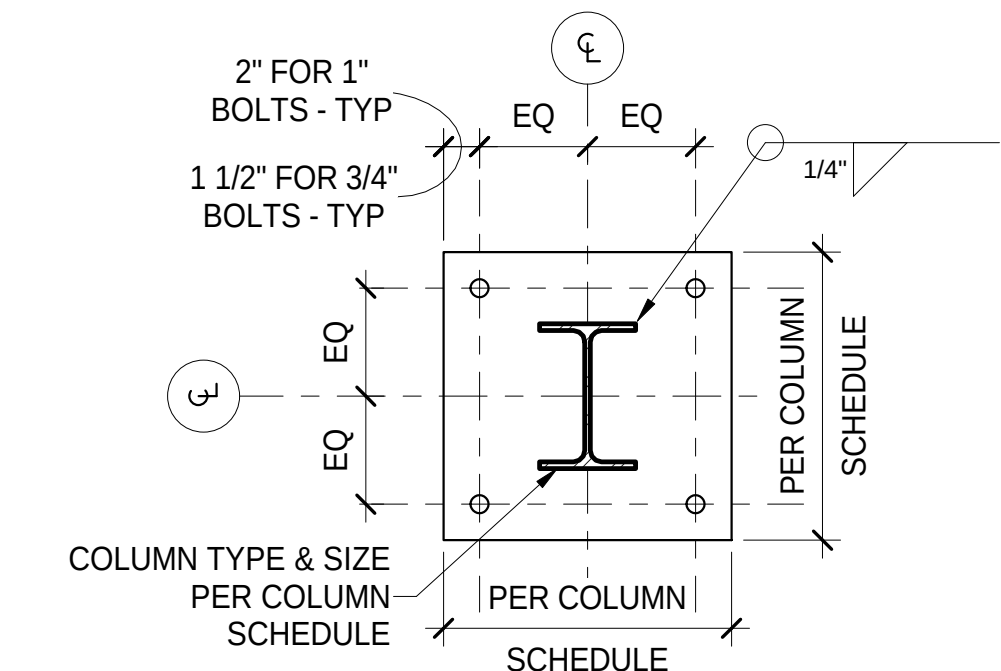
CLOSE TO BOTTOM OF FOOTING

E TYPICAL FOUNDATION PIPE PENETRATION DETAILS
S1.2 N.T.S.

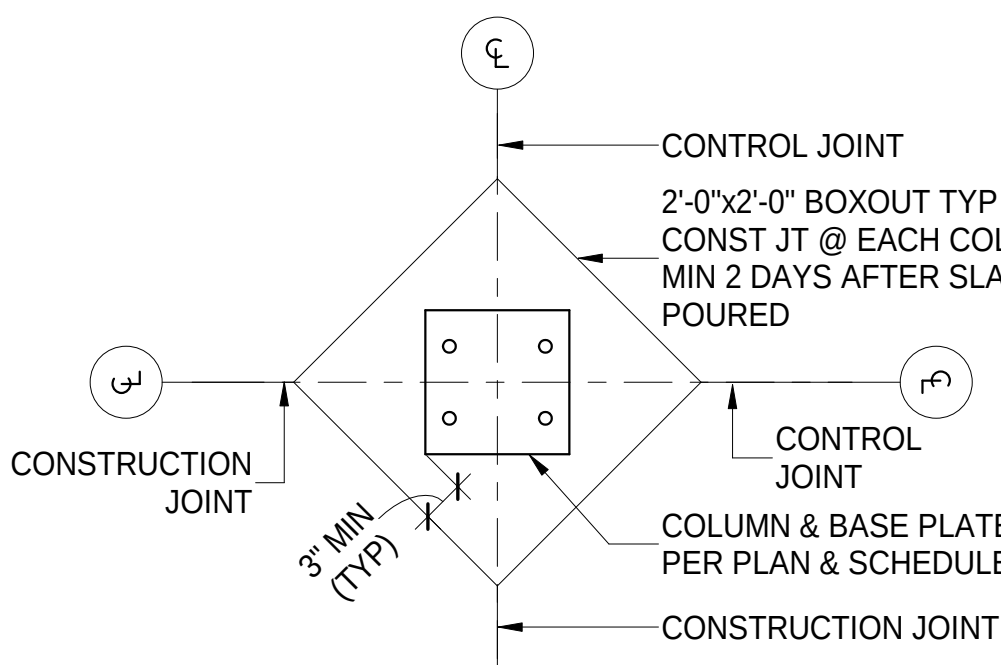
STEEL LINTEL SCHEDULE		KEY
FOR LINTELS NOT SHOWN IN THE DOOR OR WINDOW SCHEDULE OR ON THE ARCHITECT'S DRAWINGS, USE THE ANGLE SIZE SHOWN IN THE TABLE BELOW.		5" ONE ANGLE
OPENING SIZE	BRICK VENEER	
	ANGLE SIZE	
UP TO 1'-0"	N/A	
1'-1" TO 4'-8"	L 6"x3 1/2"x5/16" LLH	
4'-9" TO 6'-0"	L 6"x3 1/2"x3/8" LLH	
6'-1" TO 7'-4"	L 6"x4"x7/16" LLH	
7'-5" TO 12'-0"	L 8"x6"x7/16" LLV	
NOTES		
1. ALL ANGLES MUST HAVE 8" OF BEARING AT EACH END.		
2. THIS SCHEDULE DOES NOT INCLUDE EFFECT OF FLOOR OR ROOF FRAMING LOADS.		
3. ALL ANGLES TO BE GALVANIZED.		
4. WELD ANGLES TOGETHER, BACK-TO-BACK, w/ 3/16" WELDS, 2" EVERY 12", TOP & BOTTOM.		



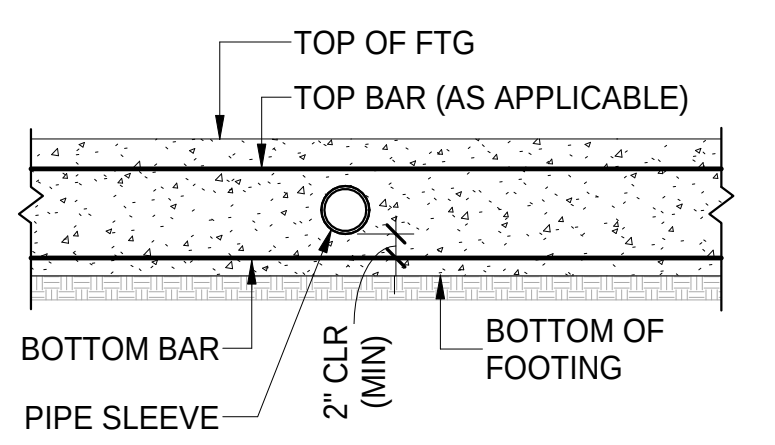
A TYP INTERIOR COLUMN
S1.2 N.T.S.



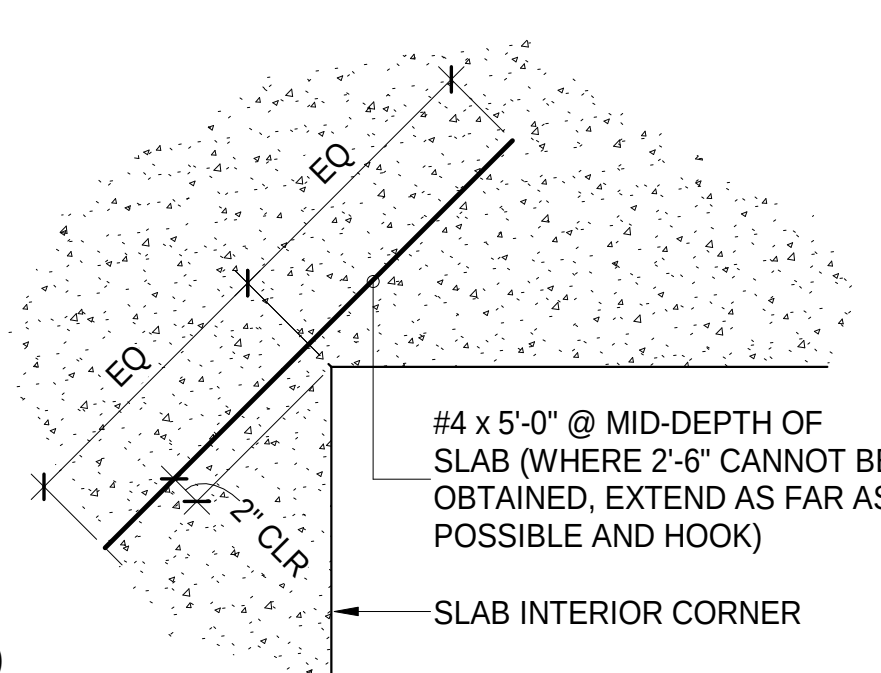
B TYP BASE PLATE DETAIL
S1.2 N.T.S.



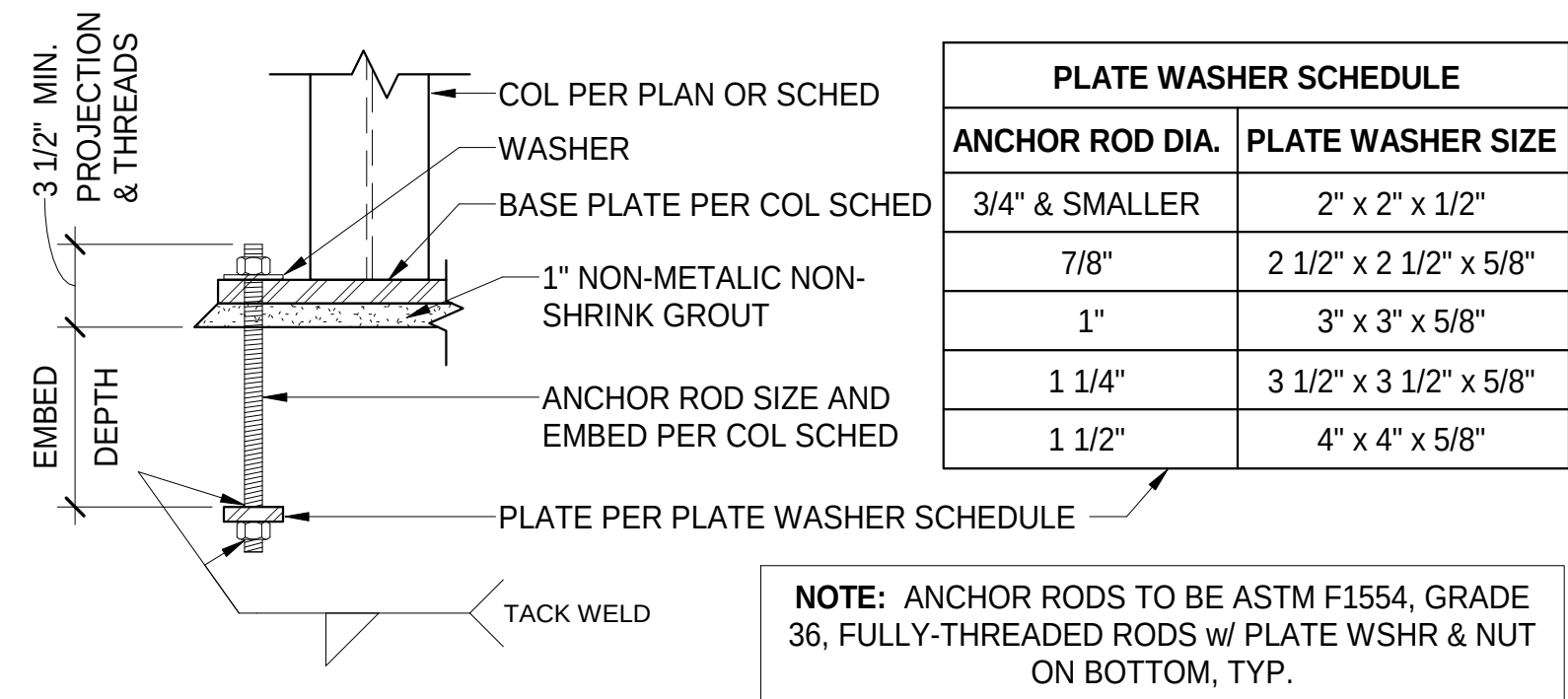
D TYP SLAB BOX-OUT @ COL
S1.2 N.T.S.



CLEAR OF TOP & BOTTOM BAR IN FOOTING OR FOUNDATION WALL (OR TRENCH FOOTING/GRADE BM.)



F REINF @ INTERIOR CORNERS
S1.2 N.T.S.



G TYP ANCHOR ROD DETAIL
S1.2 N.T.S.

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SHEET NO.

S1.2

GENERAL NOTES, SCHEDULES, AND TYPICAL DETAILS

1. SAW-CUT CONTROL JOINTS TO BE CUT AS SOON AS SURFACE WILL NOT BE TORN, ABRADED, OR OTHERWISE DAMAGED BY CUTTING ACTION. (WITHIN 8 TO 10 HR. OF BURNISHING)
2. SPACE CONTROL JOINTS AT 15'-0" MAX. FOR INTERIOR SLABS UNO ON PLANS.
3. CONSTRUCTION JOINTS TO BE USED AT END OF EACH POUR.

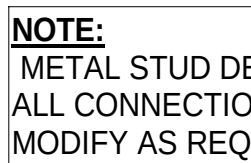


S1.3 **N.T.S.**

1. WHERE SINGLE CURTAIN OF REINFORCING OCCURS, BEND BARS AS SHOWN FOR OUTSIDE BARS.
2. FOR MORE THAN 2 BARS PER LAYER, EXTEND INNER BARS 12" INTO PERPENDICULAR FOOTING. OUTER BARS SHALL BE PLACED AS INDICATED.
3. CORNER BARS TO MATCH WALL REINFORCEMENT.



N.T.S.

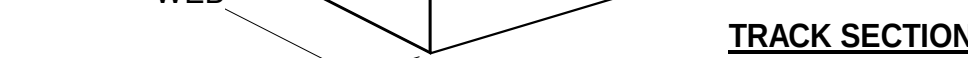
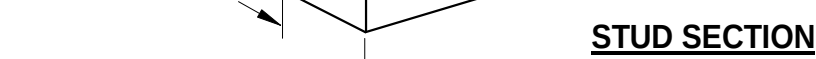


S1.3	N.T.S.
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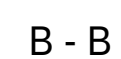
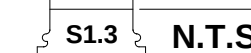
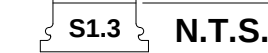
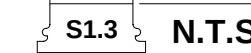
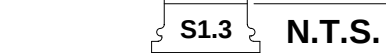
MEMBER TYPE
S = STUD
T = TRACK

**MILS TO GAUGE
CONVERSION CHART**

MILS	GAUGE
33 MILS	20 GA.
43 MILS	18 GA.
54 MILS	16 GA.
68 MILS	14 GA.
97 MILS	12 GA.



S1.3	N.T.S.
------	--------



TYP. JOIST STRUT DETAIL

NOTE:
DETAIL APPLIES TO ALL CONCENTRATED LOADS WHICH EXCEED 100# (OR MULTIPLE LOADS WHOSE SUM BTW PANEL POINTS EXCEEDS 100#) AND ARE LOCATED MORE THAN 3" ("A") OFF PANEL POINTS (TOP OR BOTTOM CHORDS)

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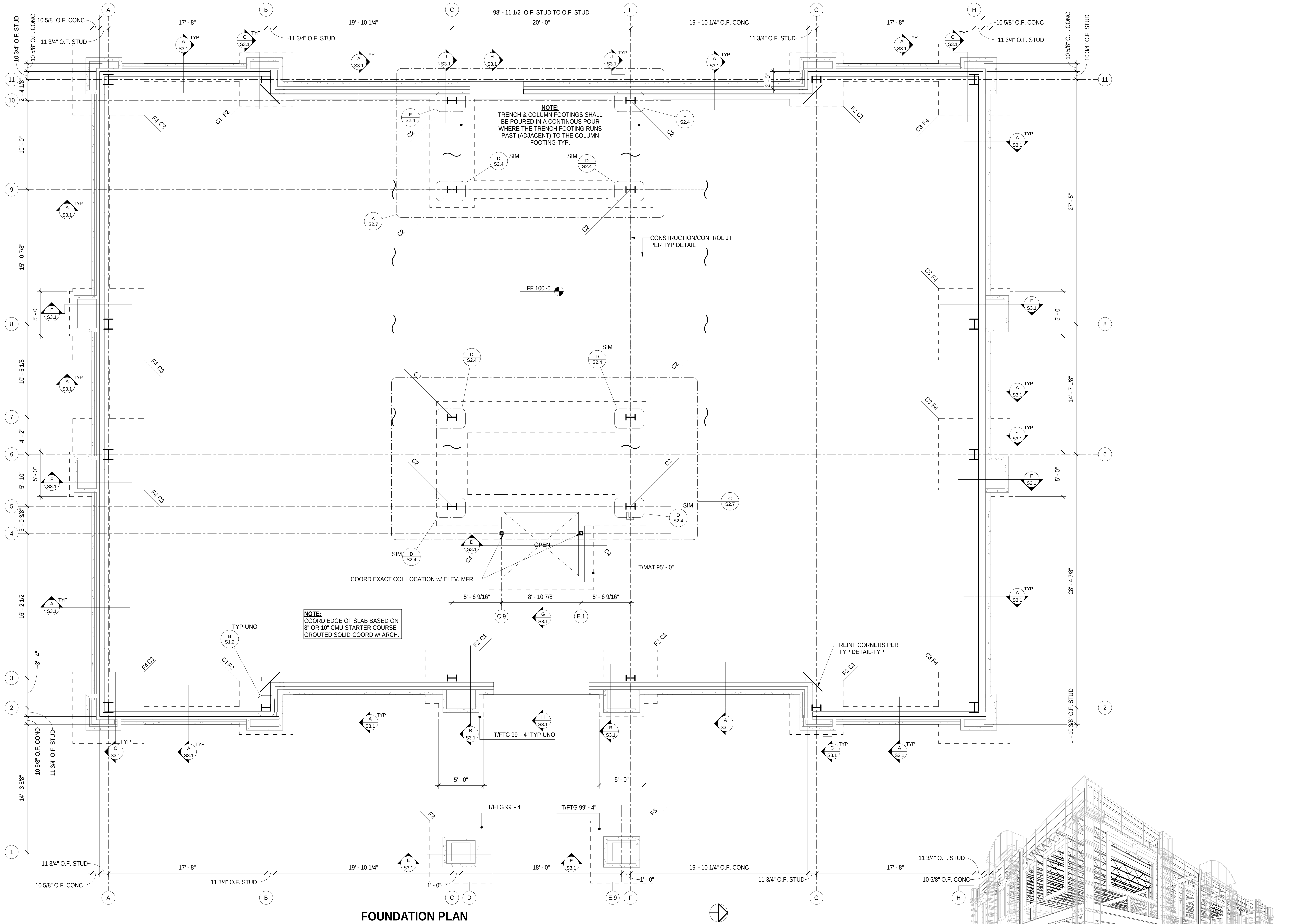
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SHEET NO.

S1.3

TYPICAL DETAILS



FOUNDATION PLAN

SHEET NOTES

- SEE SHEETS S1.1-S1.3 FOR GENERAL NOTES AND TYPICAL DETAILS.
- SEE ARCHITECTURAL DRAWINGS FOR STAIR DIMENSIONS, SECTIONS, AND ELEVATIONS.
- COORDINATE SIZE AND LOCATION OF ROUGH OPENINGS IN CONCRETE WALLS WITH ARCHITECTURAL DRAWINGS.
- PILASTER SIZES ARE MEASURED FROM OUTSIDE FACE OF CONCRETE WALL TO INSIDE FACE OF CONCRETE - UNO
- 4" CONCRETE SLAB REINFORCED WITH ONE LAYER OF 6x6 - W1.4xW1.4 WWR ON 10 MIL. POLY VAPOR BARRIER OVER 4" MINIMUM COMPACTED GRANULAR FILL. REINFORCEMENT TO BE LOCATED IN THE MIDDLE OF THE SLAB.
- ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 100'-0"
- T/FTG = TOP OF FOOTING = PER PLAN
T/CONC = TOP OF CONCRETE = PER PLAN
- ALL EXTERIOR WALL SHEATHING NOT SPECIFIED AS "SHEAR WALL SHEATHING" IS TO BE 1/2" FIRE RETARDANT TREATED PLYWOOD SHEATHING AND ATTACHED PER IBC TABLE 2304.9.1 UNLESS OTHERWISE INDICATED BY ARCHITECT.

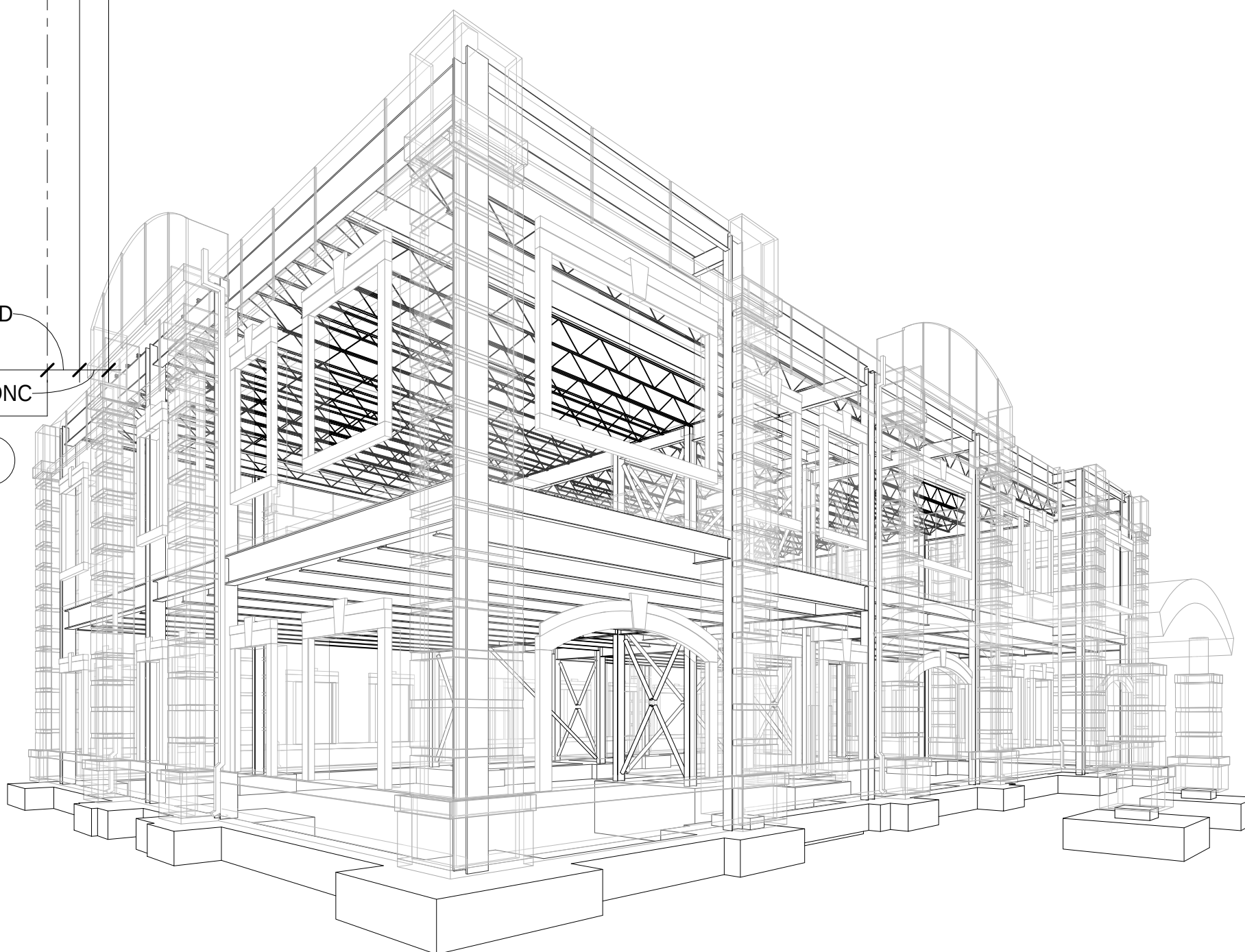
SCALE: 1/4" = 1'-0"

FOOTING SCHEDULE

Type Mark	SIZE	REINFORCING
F1	4' - 0"x4' - 0"x2' - 0"	#5 BARS @ 12"oc-EW, T & B
F2	6' - 0"x6' - 0"x2' - 0"	#5 BARS @ 12"oc-EW, T & B
F3	7' - 0"x7' - 0"x2' - 0"	#5 BARS @ 12"oc-EW, T & B
F4	8' - 0"x8' - 0"x2' - 0"	#5 BARS @ 12"oc-EW, T & B

COLUMN SCHEDULE

MARK	SIZE	BASE PLATE	ANCHOR BOLTS
C1	W12x40	3/4"x16"x16"	4-3/4"dia w/ 12" EMB MIN
C2	W12x50	1 1/4" THICK-REFER TO SHEET S2.4	12 OR 8 3/4"dia w/ 12" EMB MIN (SEE SHEET S2.4)
C3	W12x136	1 1/2"x20"x20"	6-3/4"dia w/ 12" EMB MIN
C4	HSS4x4x3/8"	PER SECTION	PER SECTION



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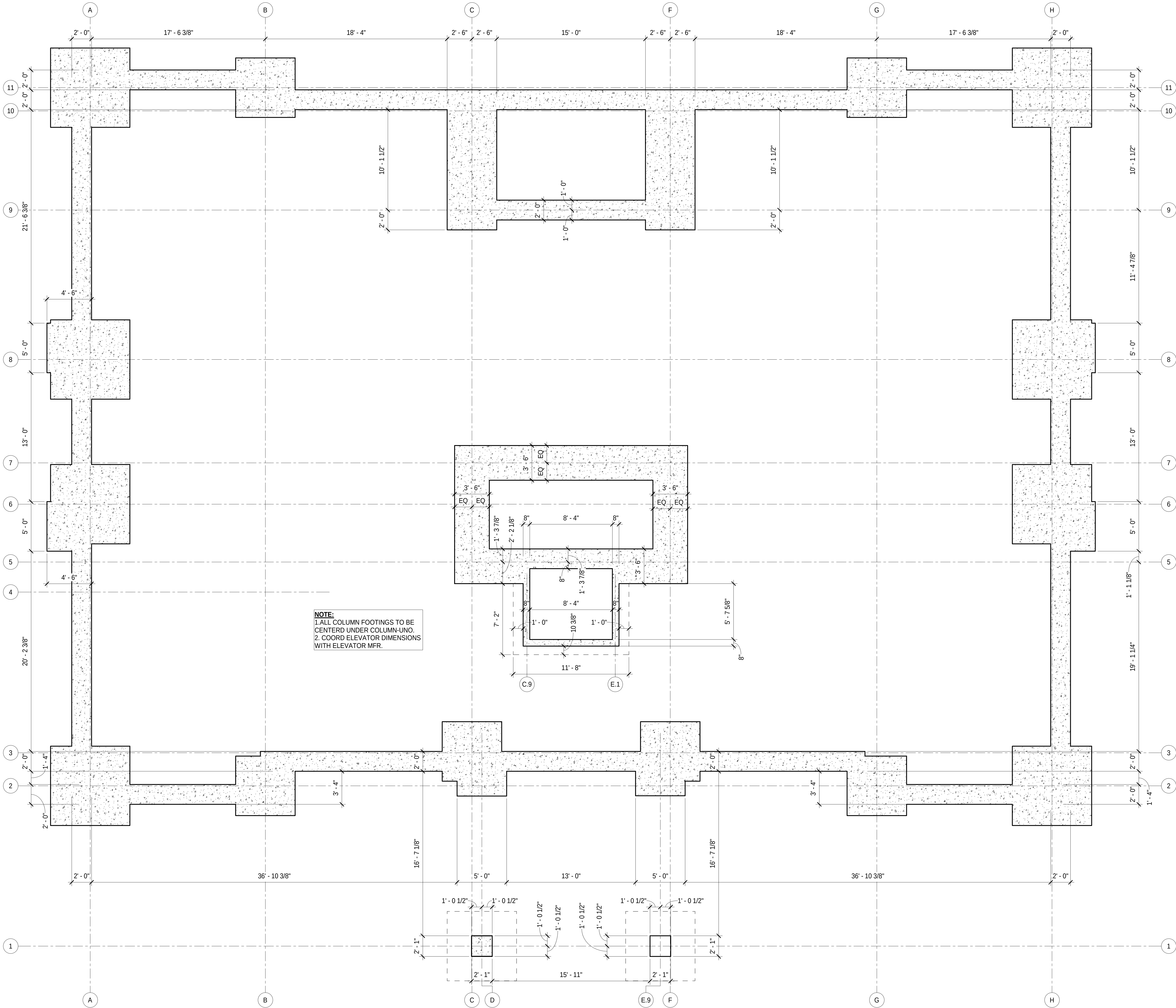
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SHEET NO.

S2.1

FOUNDATION PLAN



DIMENSIONED FOUNDATION PLAN

SHEET NOTES

- SEE SHEETS S1.1-S1.3 FOR GENERAL NOTES AND TYPICAL DETAILS.
- REFER TO SHEET S2.1 FOR BALANCE OF INFORMATION.

SCALE: 1/4" = 1'-0"

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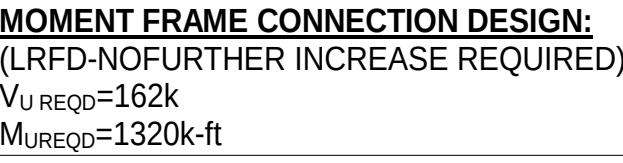
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SHEET NO.

S2.1A

DIMENSIONED FOUNDATION PLAN



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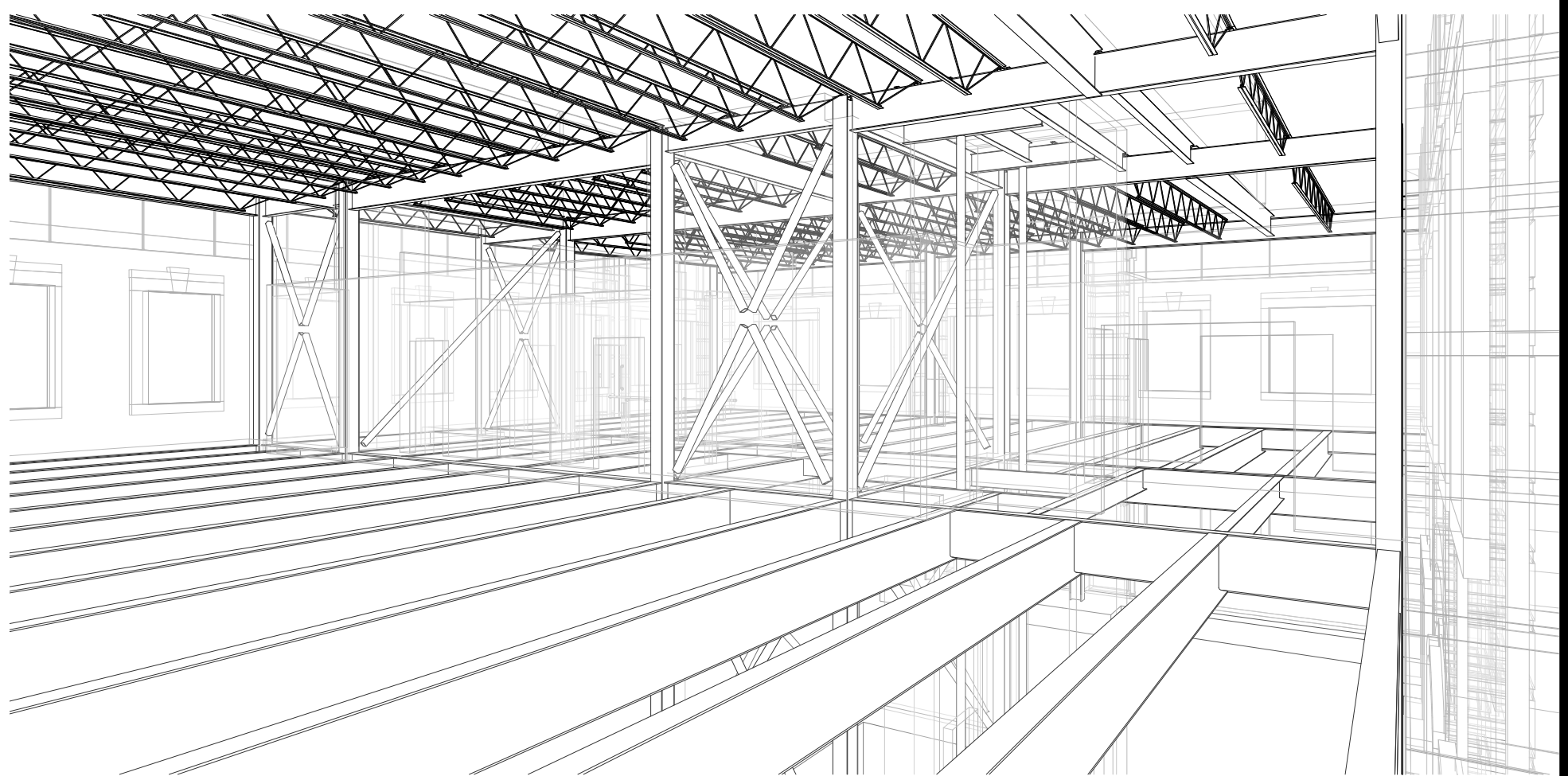
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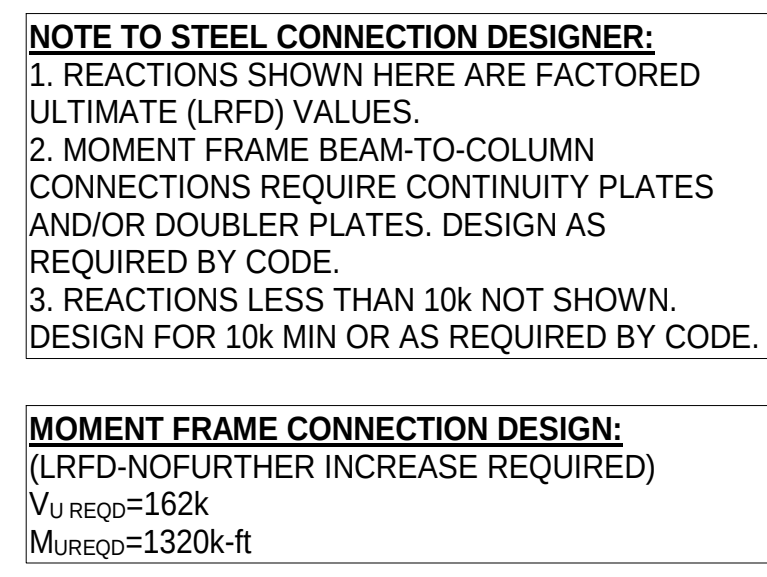


SECOND FLOOR FRAMING PLAN

1. SEE SHEETS S11-S13 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. FLOOR CONNECTION: 2"1/2" NORMAL WEIGHT CONCRETE SLAB REINFORCED WITH ONE LAYER OF 6x6-W1.4XW1.4 WWF (REINFORCEMENT TO BE LOCATED HALFWAY BETWEEN TOP OF SLAB AND TOP OF DECK) ON 2"x20ga.GALVANIZED, COMPOSITE (4"1/2" TOTAL SLAB THICKNESS) TYPE "VI" STEEL DECK OVER STEEL BEAMS. ATTACH DECK TO SUPPORTS WITH #14 TEK SCREWS OR 5/8" DIA PUDDLE WELDS, AND AT SIDELAPS WITH #10 TEK SCREWS OR WELDS. ATTACH IN A 3/64 ATTACHMENT PATTERN WITH (5) SIDELAPS PER DECK SPAN FOR ENTIRE FLOOR. SEE TYPICAL DETAILS FOR ATTACHMENT.
3. (H)-INDICATES NUMBER OF SHEAR STUDS ON EA. BEAM. SHEAR STUDS SHALL BE PER GEN. NOTE. NOTES & TYPICAL DETAILS (VERIFY w/ SHOP DRAWINGS).
4. SEE ARCHITECTURAL DRAWINGS FOR STAIR DIMENSIONS, SECTIONS, AND ELEVATIONS.
5. MAXIMUM BEAM SPACING = 6'-0"oc
6. ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 100'-0"
 - * T/STL = TOP OF STEEL ELEVATION = 116'-3 1/2"

► DENOTES MOMENT CONNECTION.





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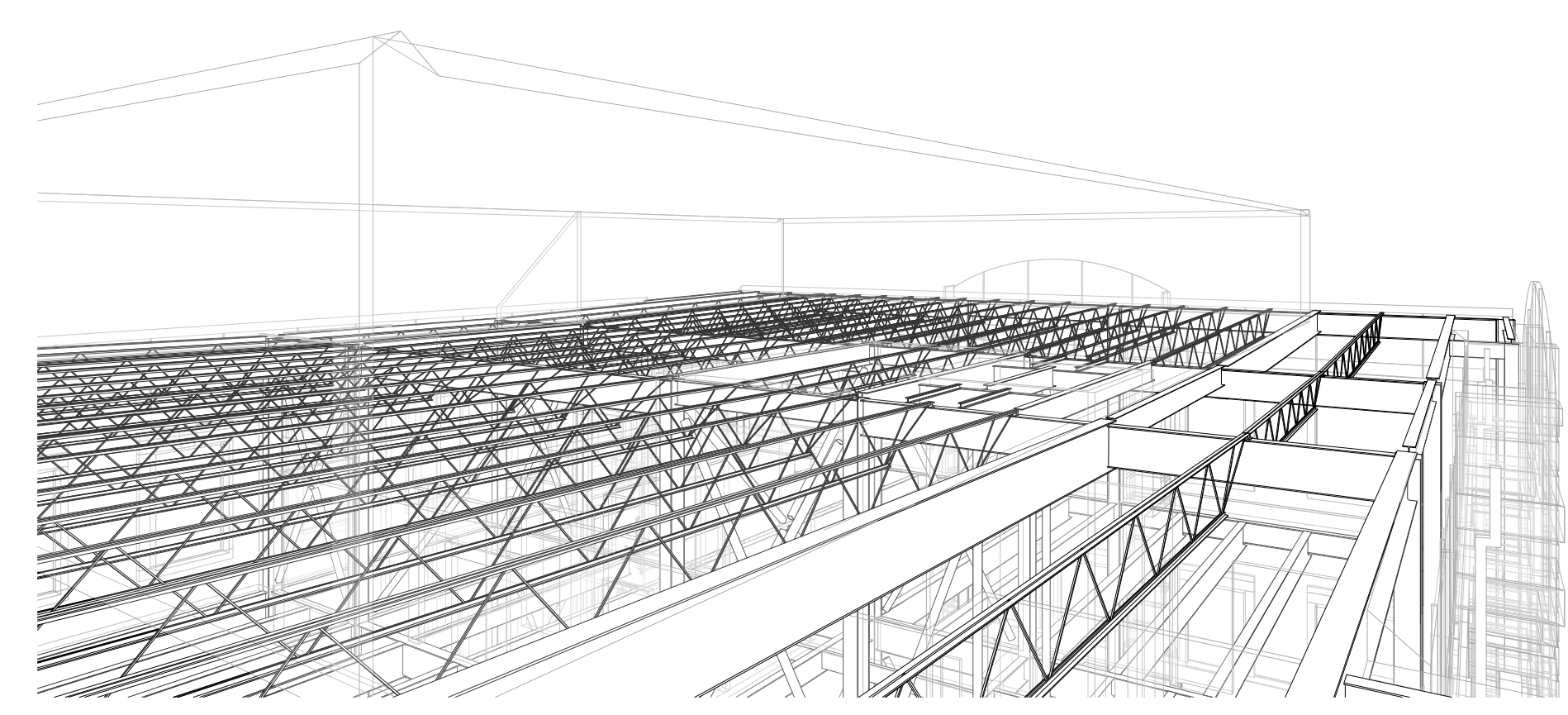
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SHEET NOTES

1. SEE SHEETS S1.1-S1.3 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. PROVIDE HORIZONTAL JOIST BRIDGING AND SPACING PER LATEST S.J.I. MANUAL.
3. JOIST MANUFACTURER TO COORDINATE WITH CONTRACTORS TO DETERMINE RTU AND TRANSFORMER LAYOUTS, WEIGHTS, AND FOOTPRINTS. JOIST MANUFACTURER TO COORDINATE ROOF HATCH SUPPLIER FOR SIZE AND LOCATION. RTU AND EXHAUST HOOD LOGS ARE TO BE IN ADDITION TO OTHER DESIGN LOADS.
4. MAXIMUM JOIST SPACING = 5'-0" ON CENTER
5. ROOF CONSTRUCTION: 1 1/2" Z29ga GALVANIZED TYPE "B" METAL ROOF DECK ATTACHED TO SUPPORTS WITH #14 TEK SCREWS, AND AT SIDELAPS WITH #10 TEK SCREWS. ATTACH IN A 36" SCREW PATTERN WITH (6) SIDELAP SCREWS PER JOIST SPAN FOR A 15'-0" FOOT MIN WIDE STRIP AROUND THE PERIMETER. ATTACH IN A 36" SCREW PATTERN WITH (4) SIDELAP SCREWS PER JOIST SPAN FOR THE REMAINDER OF THE ROOF. SEE TYPICAL DETAILS FOR ATTACHMENT.
6. ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 100'-0"
 - * T/STL = TOP OF STEEL ELEVATION = PER PLAN

SCALE: 1/4" = 1'-0"



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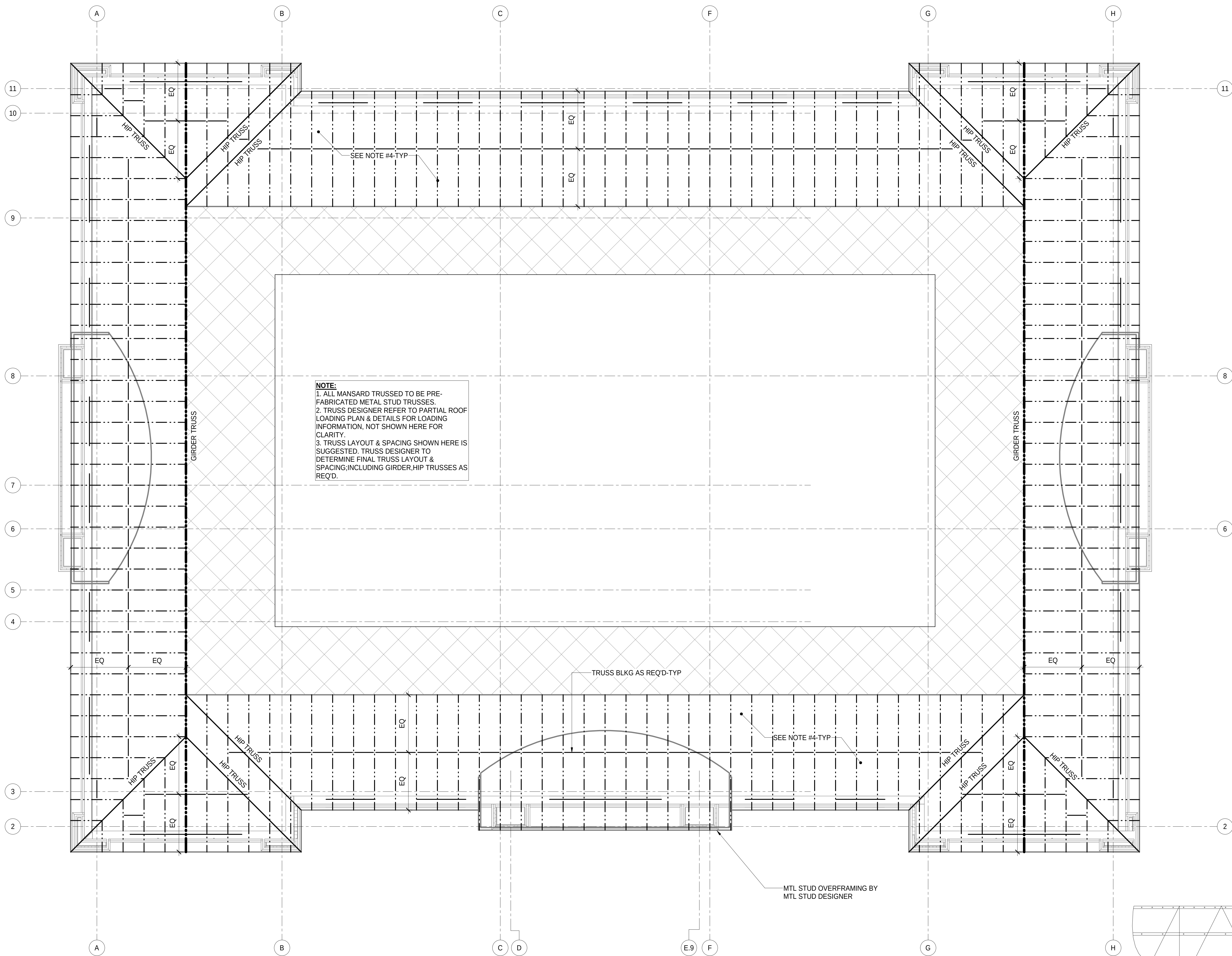
SHEET NO. _____

S2 3

32.3

ROOF FRAMING PLAN

Response	Percentage
Yes, it is a crisis	~80%
No, it is not a crisis	~20%



NOTE:
1. ALL MANSARD TRUSSED TO BE PRE-FABRICATED METAL STUD TRUSSES.
2. TRUSS DESIGNER REFER TO PARTIAL ROOF LOADING PLAN & DETAILS FOR LOADING INFORMATION, NOT SHOWN HERE FOR CLARITY.
3. TRUSS LAYOUT & SPACING SHOWN HERE IS SUGGESTED. TRUSS DESIGNER TO DETERMINE FINAL TRUSS LAYOUT & SPACING INCLUDING GIRDER, HIP TRUSSES AS REQ'D.

MANSARD TRUSS FRAMING PLAN

SHEET NOTES

- SEE SHEETS S1.1-S1.3 FOR GENERAL NOTES AND TYPICAL DETAILS.
- ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 100'-0"
 - TRUSS/BRG = TRUSS BEARING ELEVATION = VARIES-SEE SECTIONS
- MAXIMUM TRUSS SPACING UNLESS NOTED OTHERWISE: 2'-0"
- ROOF SHEATHING PER MARK R1 OF TYPICAL MANSARD ROOF SHEATHING DETAIL.
- REFER TO SHEET S2.3 FOR BALANCE OF INFORMATION.

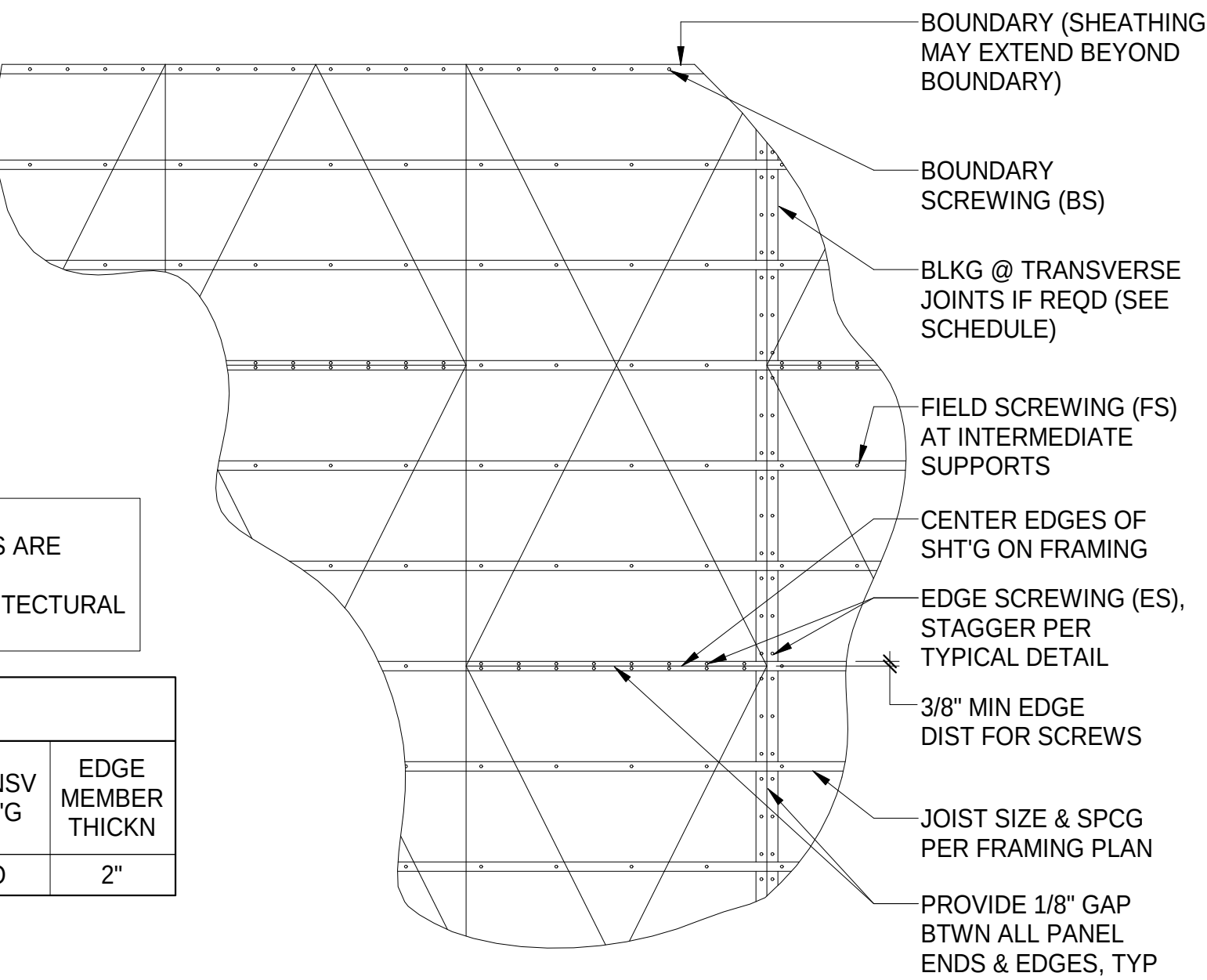
SCALE: 1/4" = 1'-0"

NOTE:
1. SHEATHING SCREWS SHALL BE DRIVEN SO THAT THEIR HEADS ARE FLUSH WITH THE SURFACE OF THE SHEATHING.
2. SHEATHING SHALL BE FIRE-RETARDANT TREATED. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

SHEATHING & SCREWING SCHEDULE							
MARK	SHT'G THICK	SCREW SIZE	BS SPACING	ES SPACING	FS SPACING	TRANSV BLK'G	EDGE MEMBER THICKN
R1	19/32"	#12	6"	6"	12"	NO	2"

A TYPICAL MANSARD ROOF SHEATHING DETAIL

S2.3B N.T.S.



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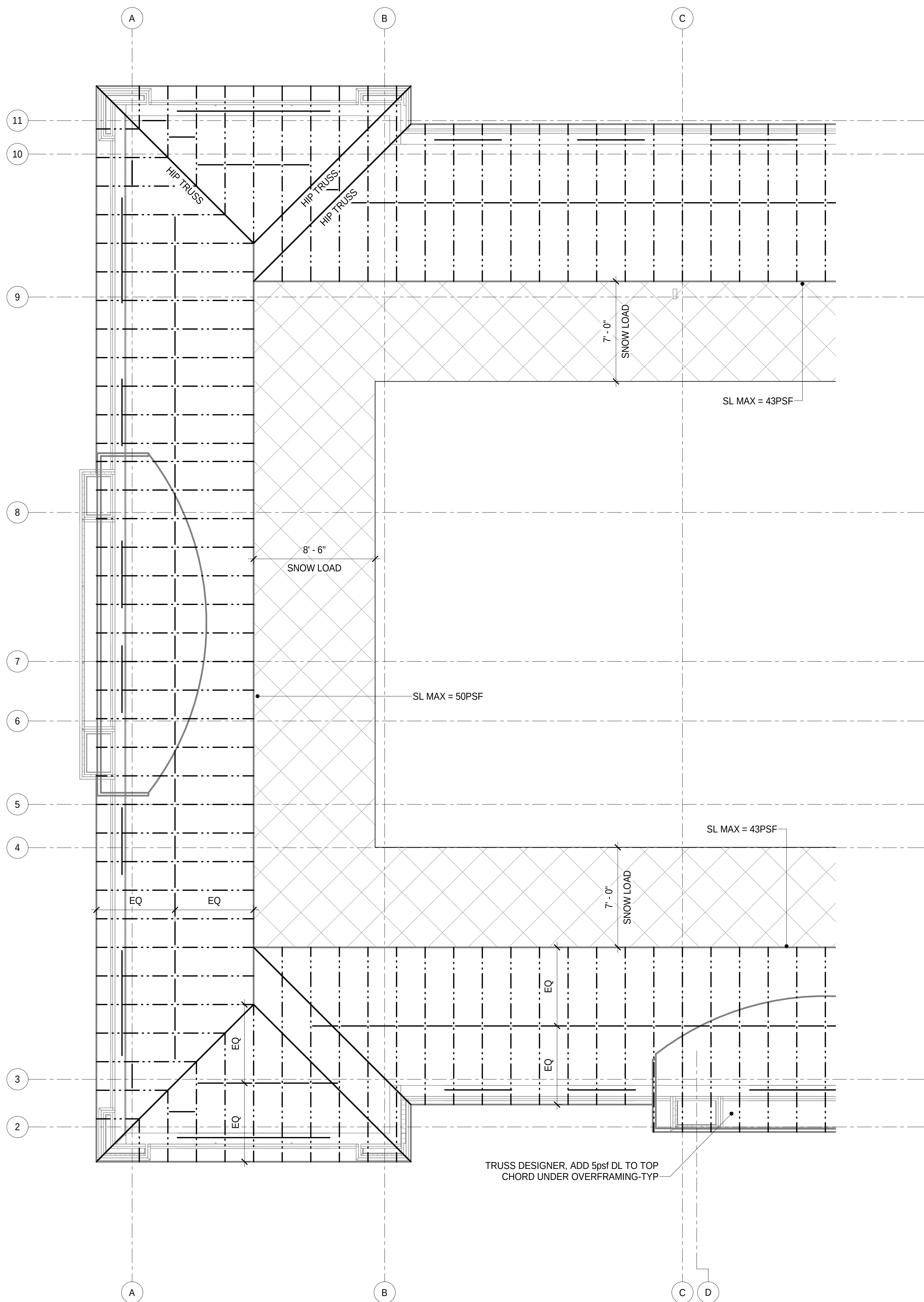
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SHEET NO.

S2.3B
MANSARD ROOF FRAMING

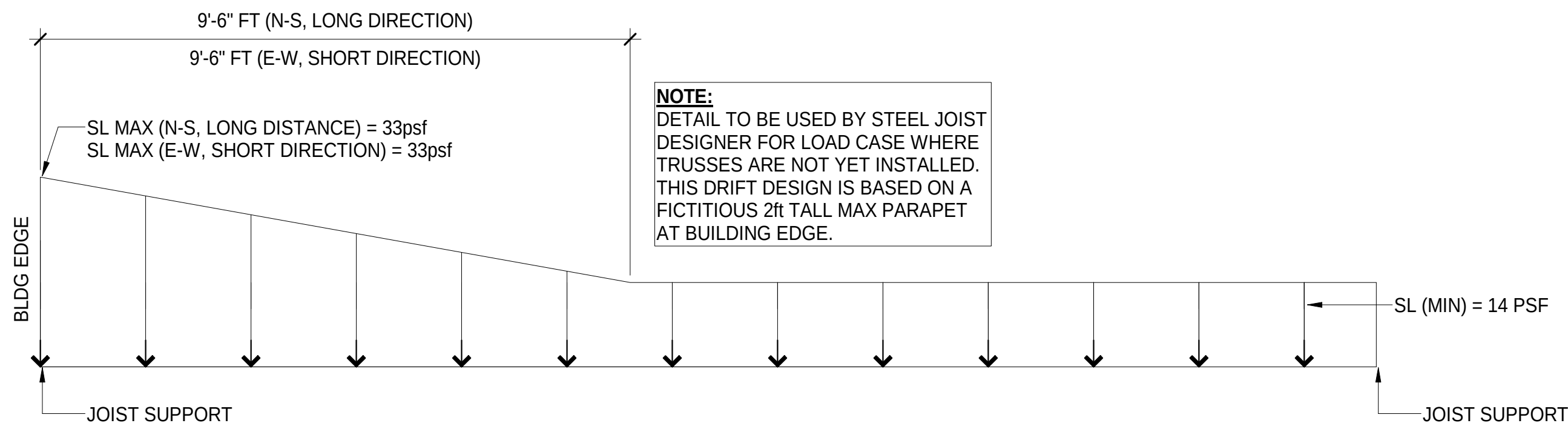


PARTIAL ROOF LOADING PLAN

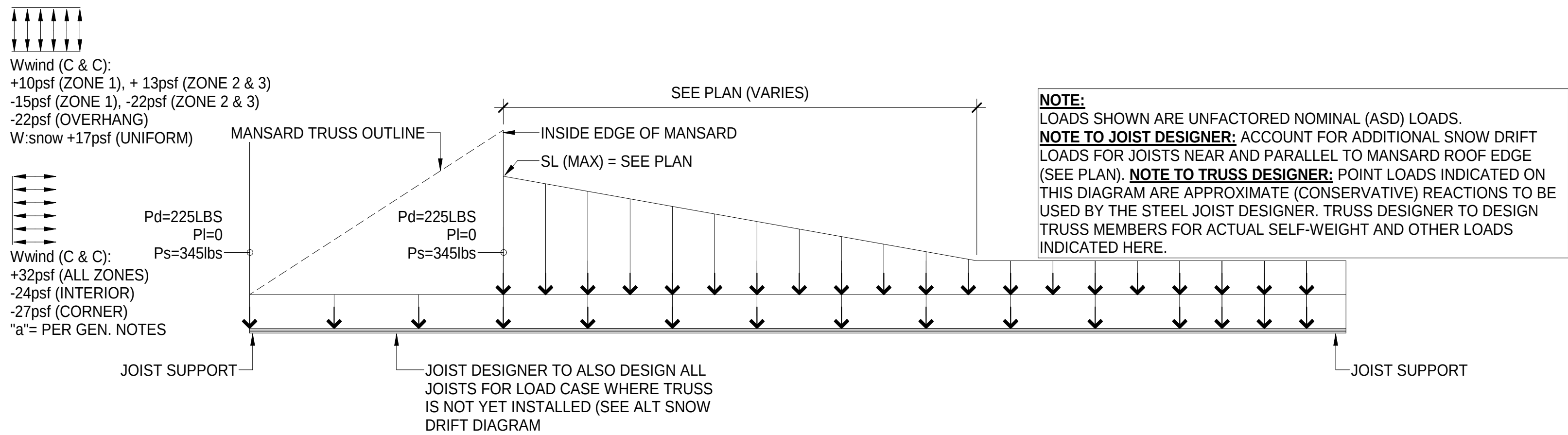
SHEET NOTES

- SEE SHEETS S1.1-S1.3 FOR GENERAL NOTES AND TYPICAL DETAILS.
- REFER TO SHEET S2.3 & S2.3B FOR BALANCE OF INFORMATION.

SCALE: 1/4" = 1'-0"



ALT SNOW DRIFT LOAD DIAGRAM (STL JST DIAGRAM)



TYPICAL STEEL JOIST & MANSARD TRUSS LOAD DIAGRAM

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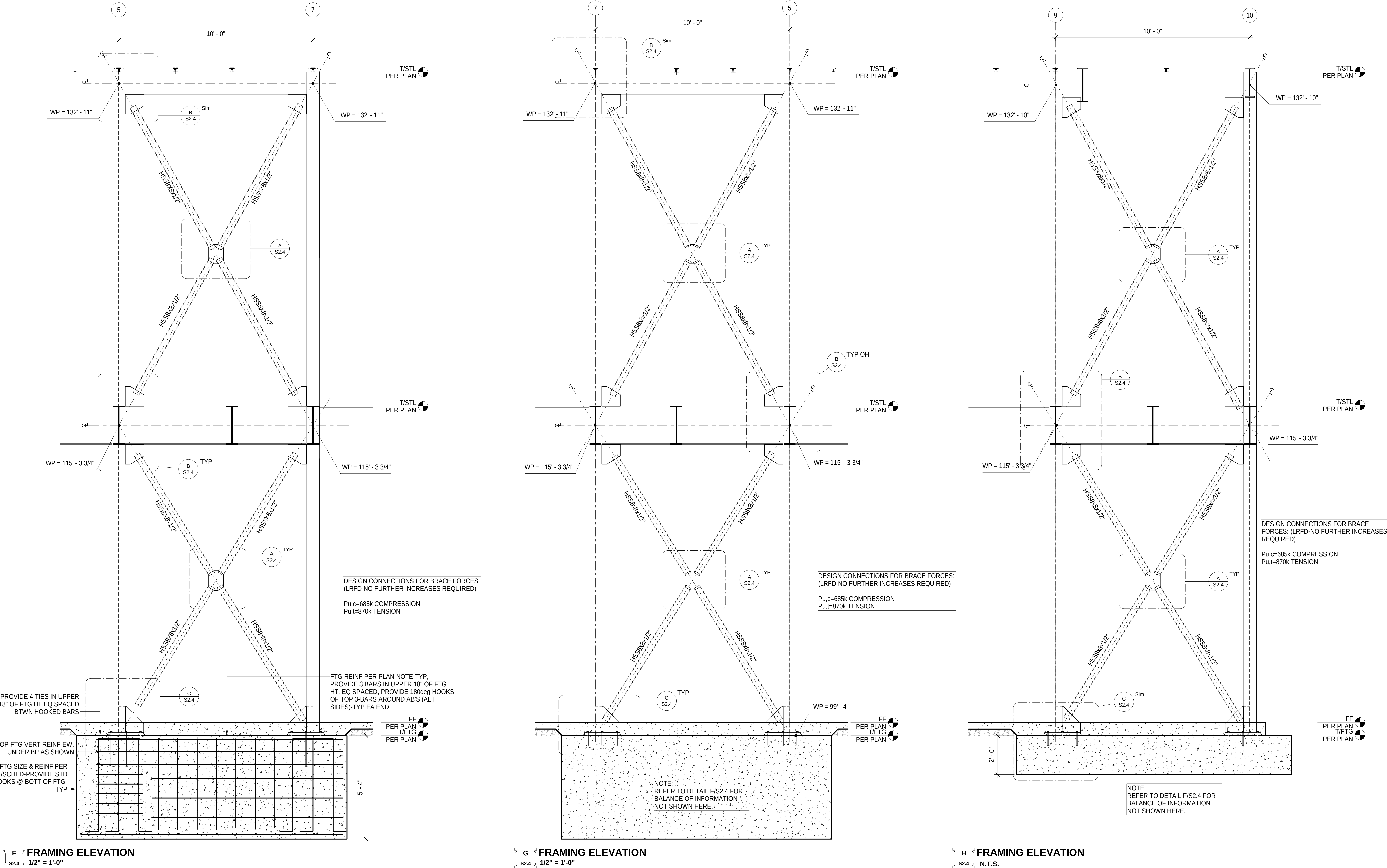
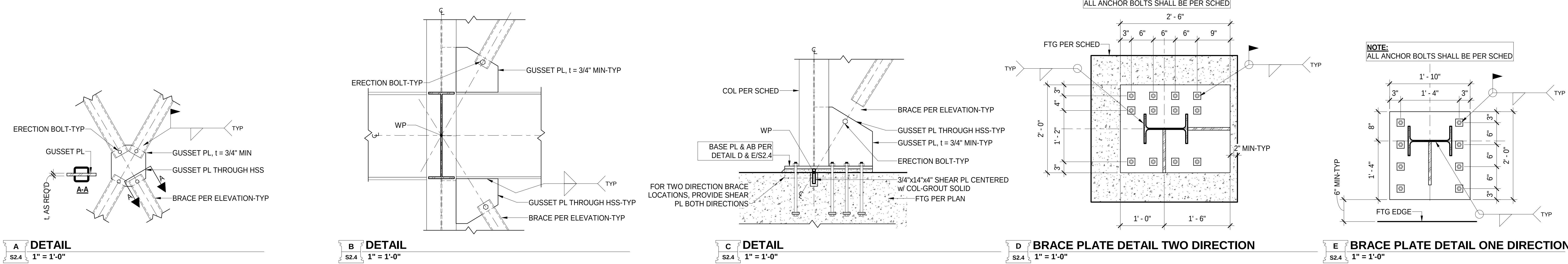
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SHEET NO.

S2.3C

PARTIAL ROOF LOADING PLAN



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S2.4
BRACING ELEVATIONS



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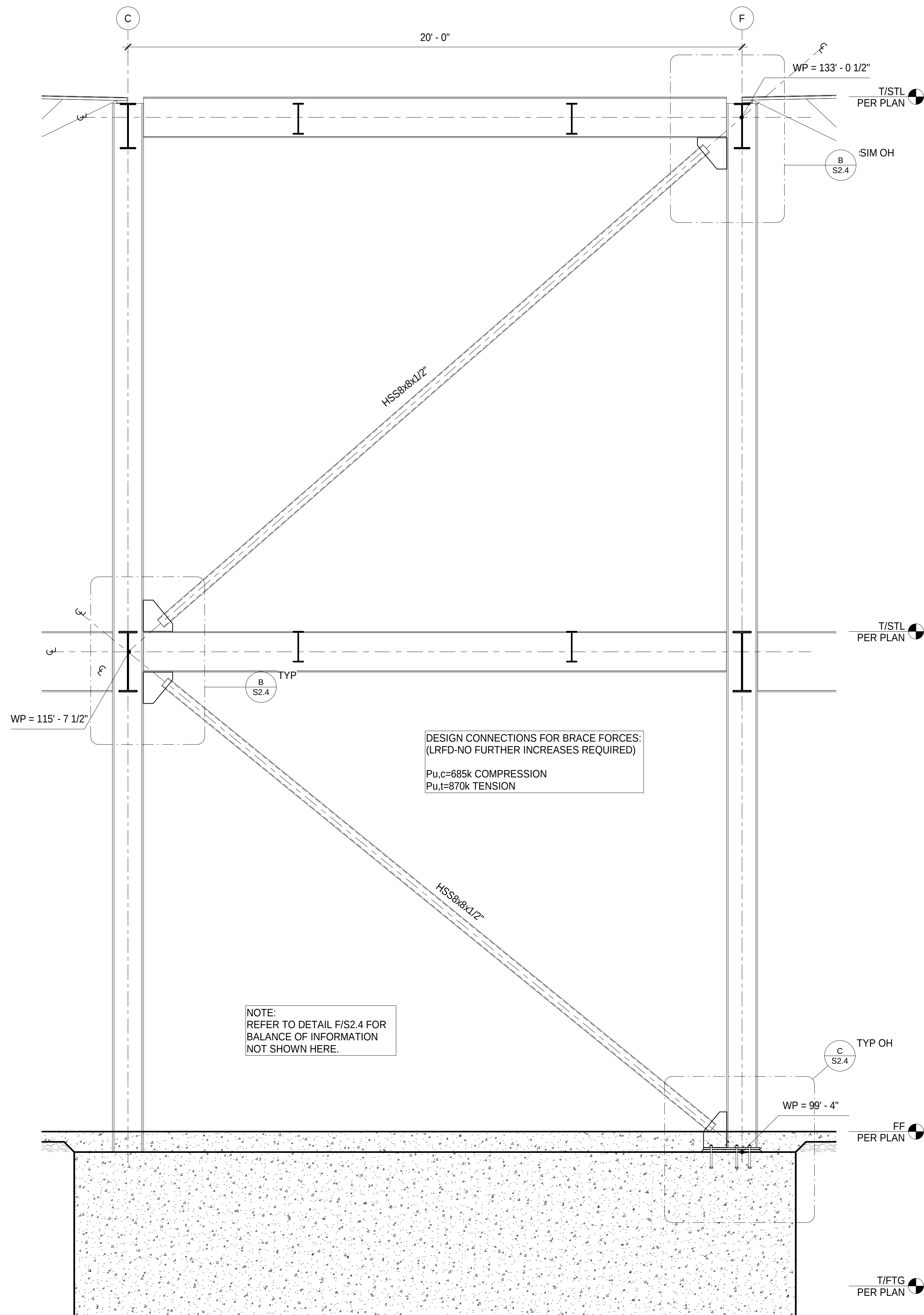
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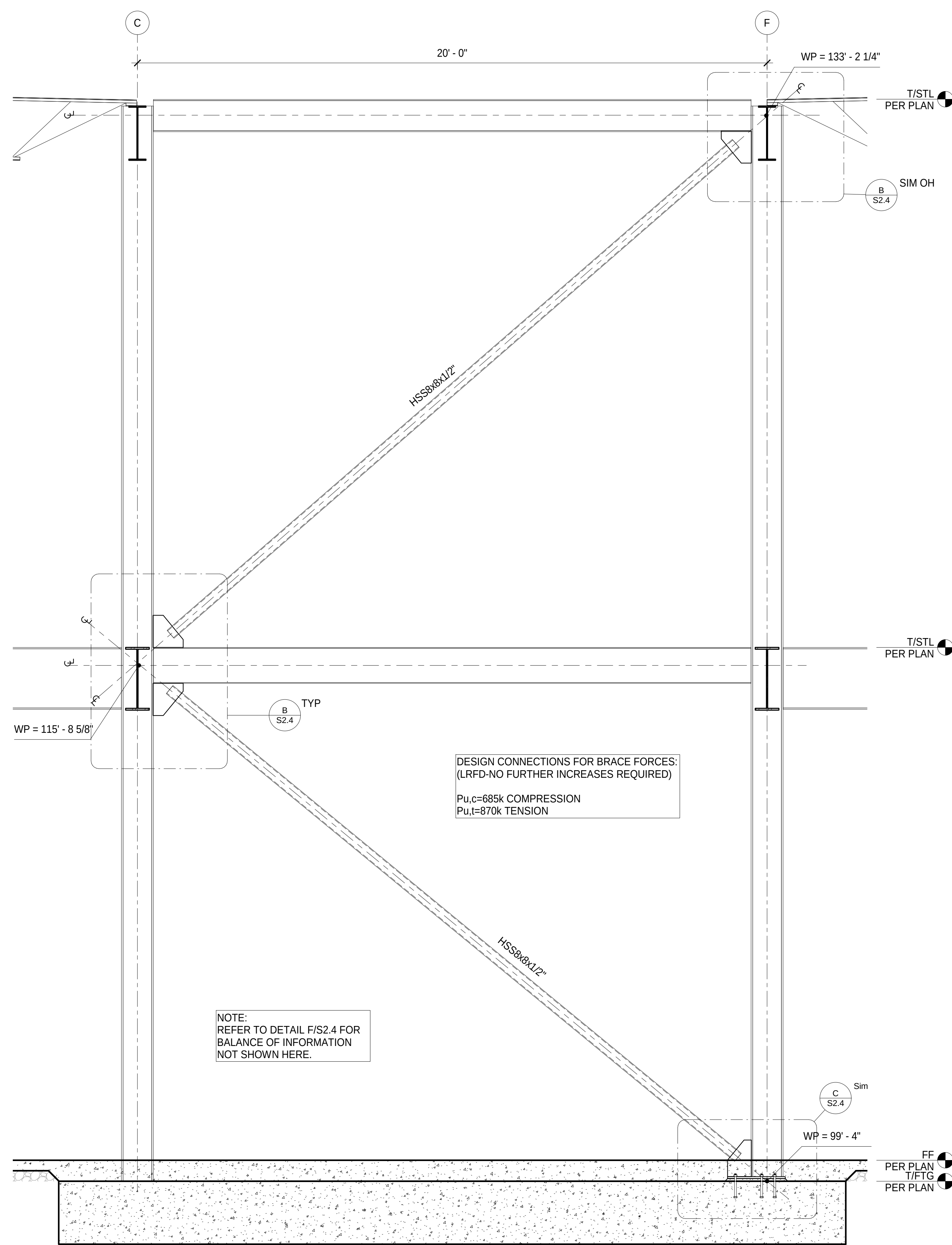
S2 5

32.3

BRACING ELEVATIONS



A FRAMING ELEVATION
S2.6 1/2" = 1'-0"



B FRAMING ELEVATION
S2.6 N.T.S.

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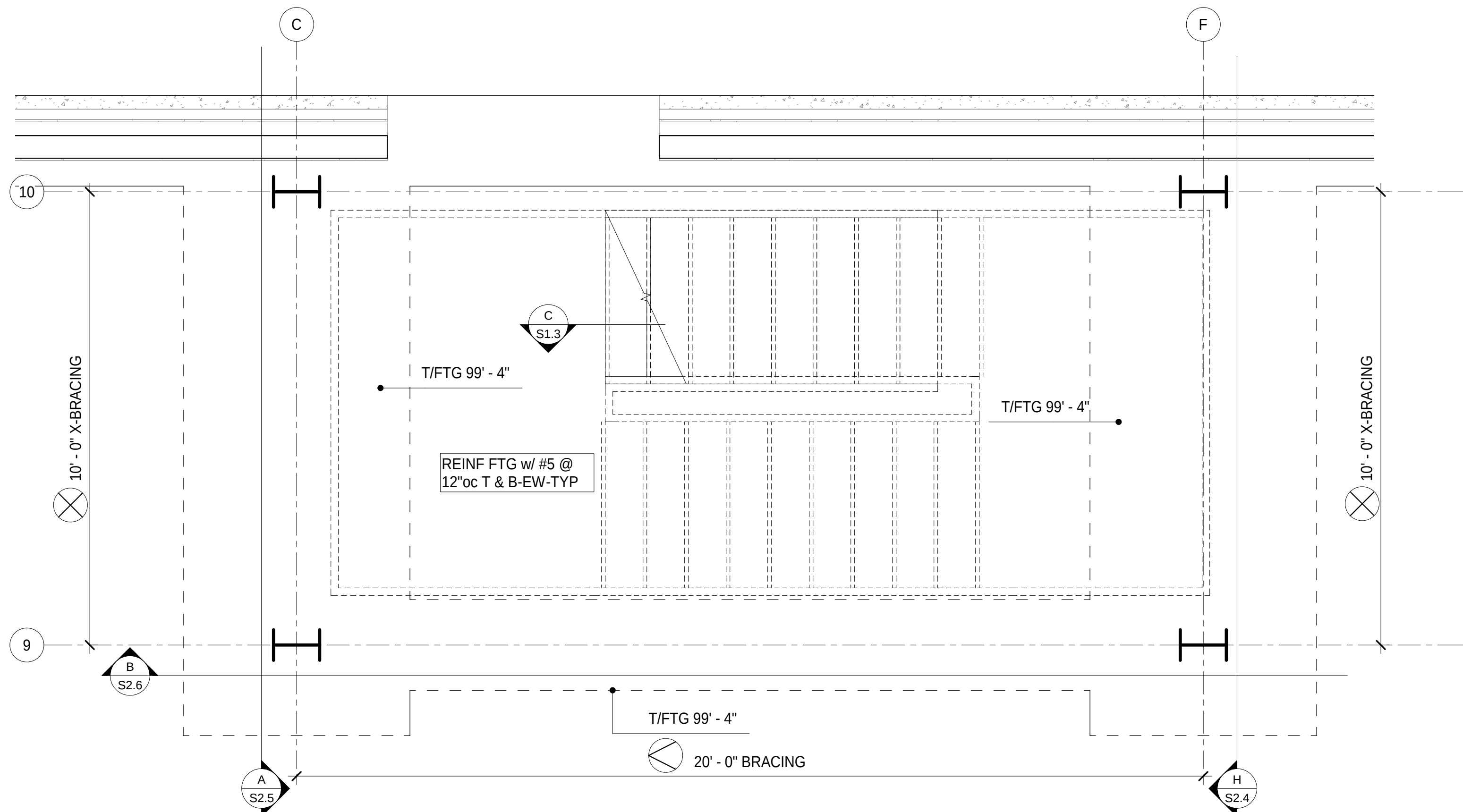
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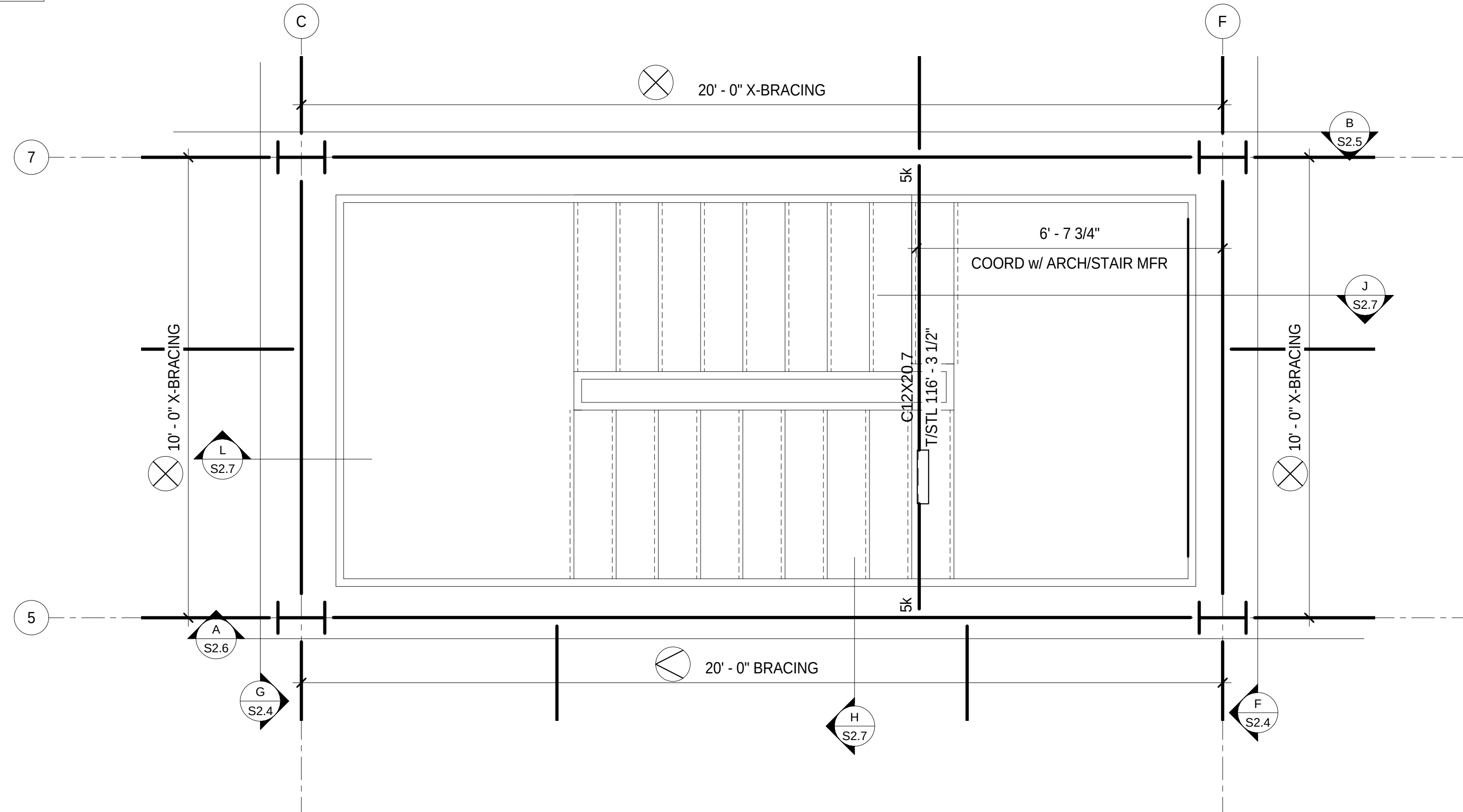
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S2.6

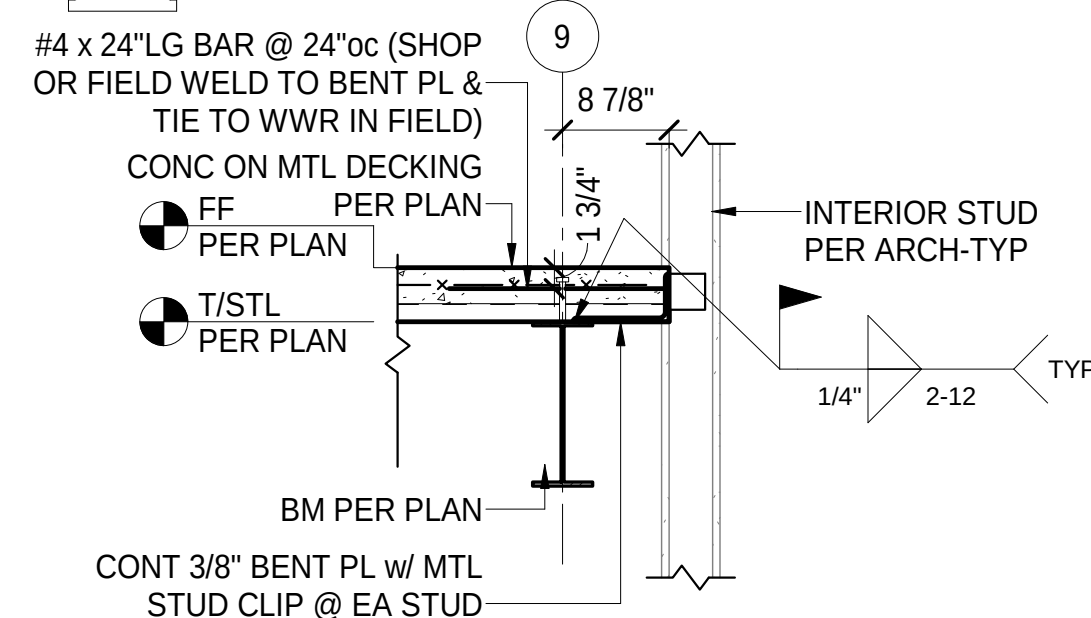
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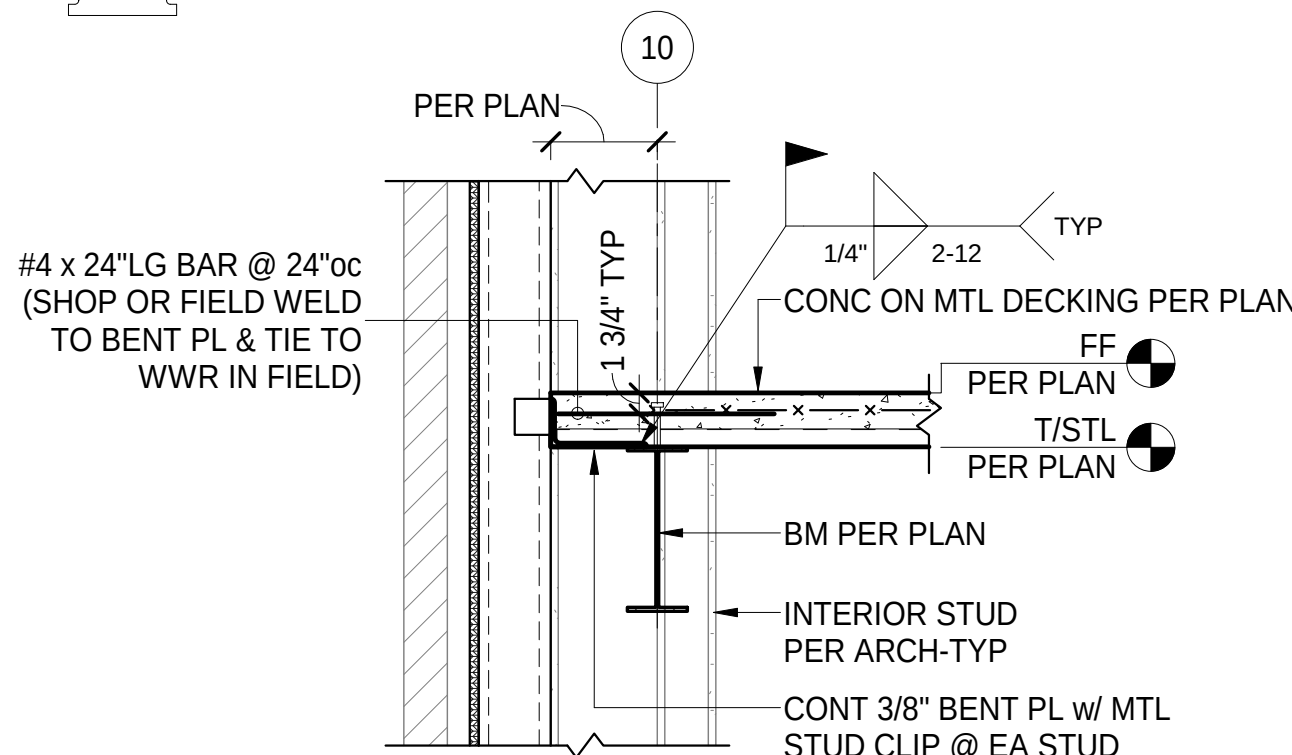
A STAIR FOUNDATION CALLOUT
S2.7 1/2" = 1'-0"



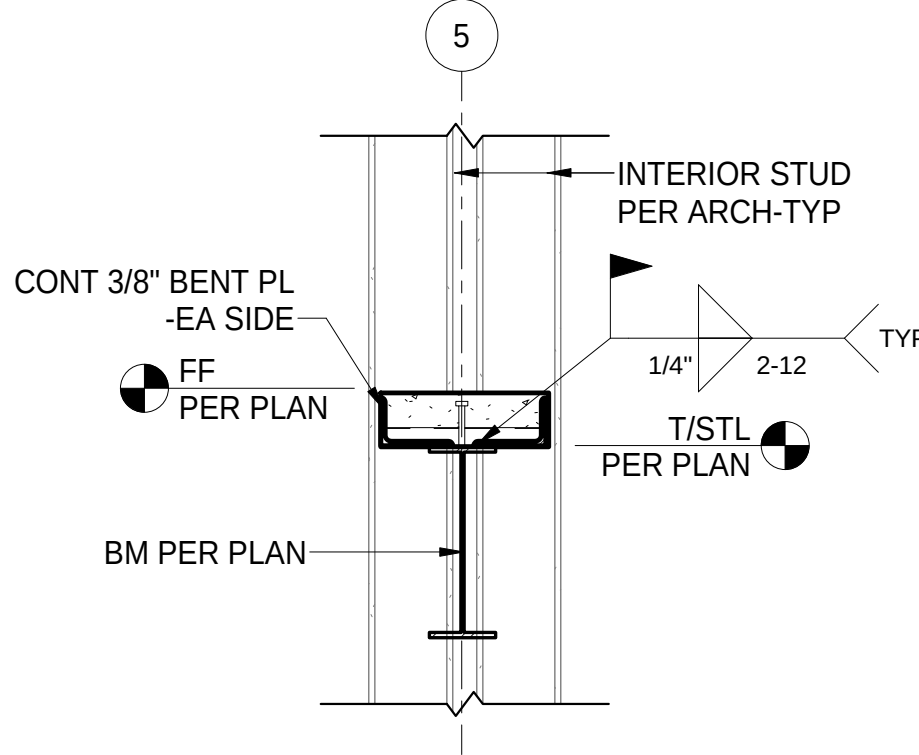
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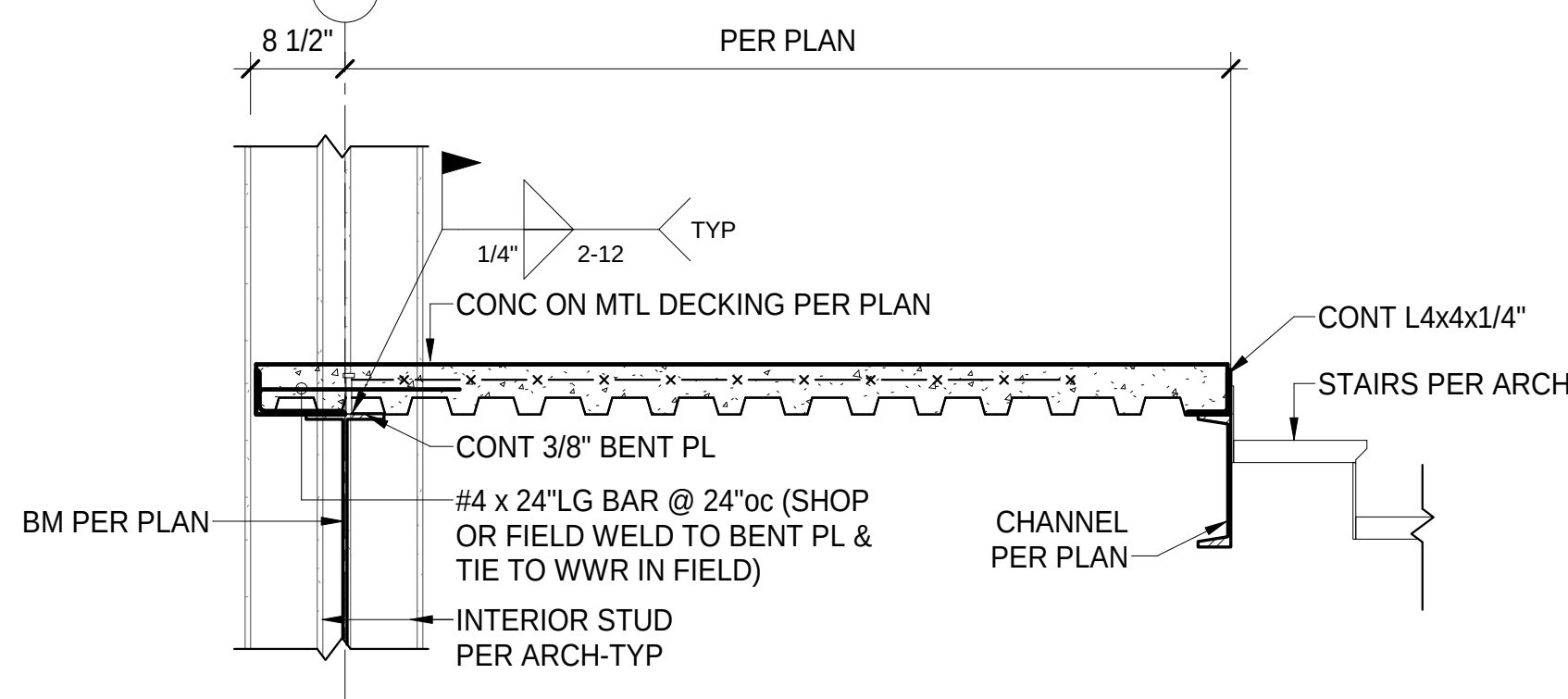
E FRAMING SECTION
S2.7 3/4" = 1'-0"



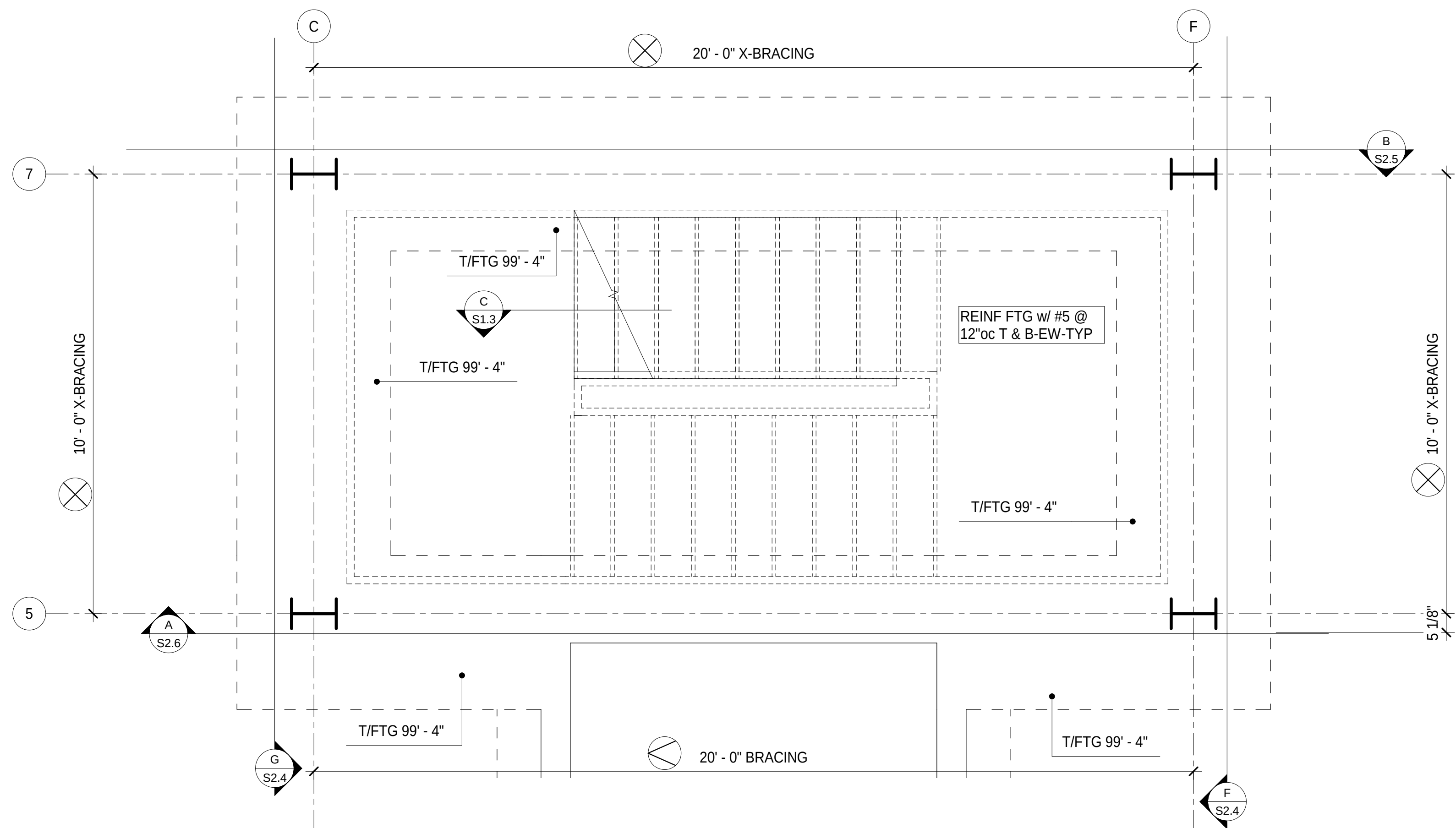
G FRAMING SECTION
S2.7 3/4" = 1'-0"



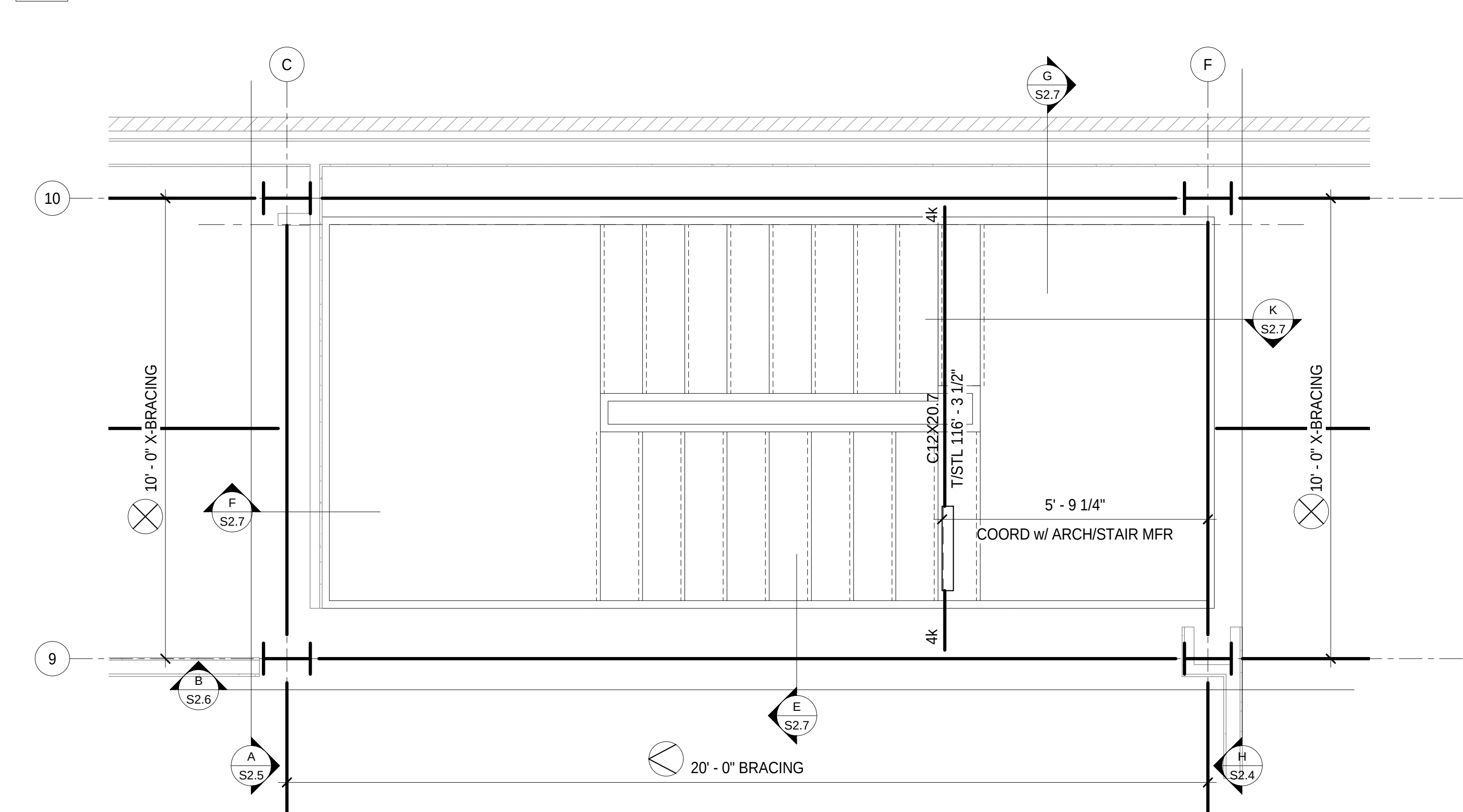
H FRAMING SECTION
S2.7 3/4" = 1'-0"



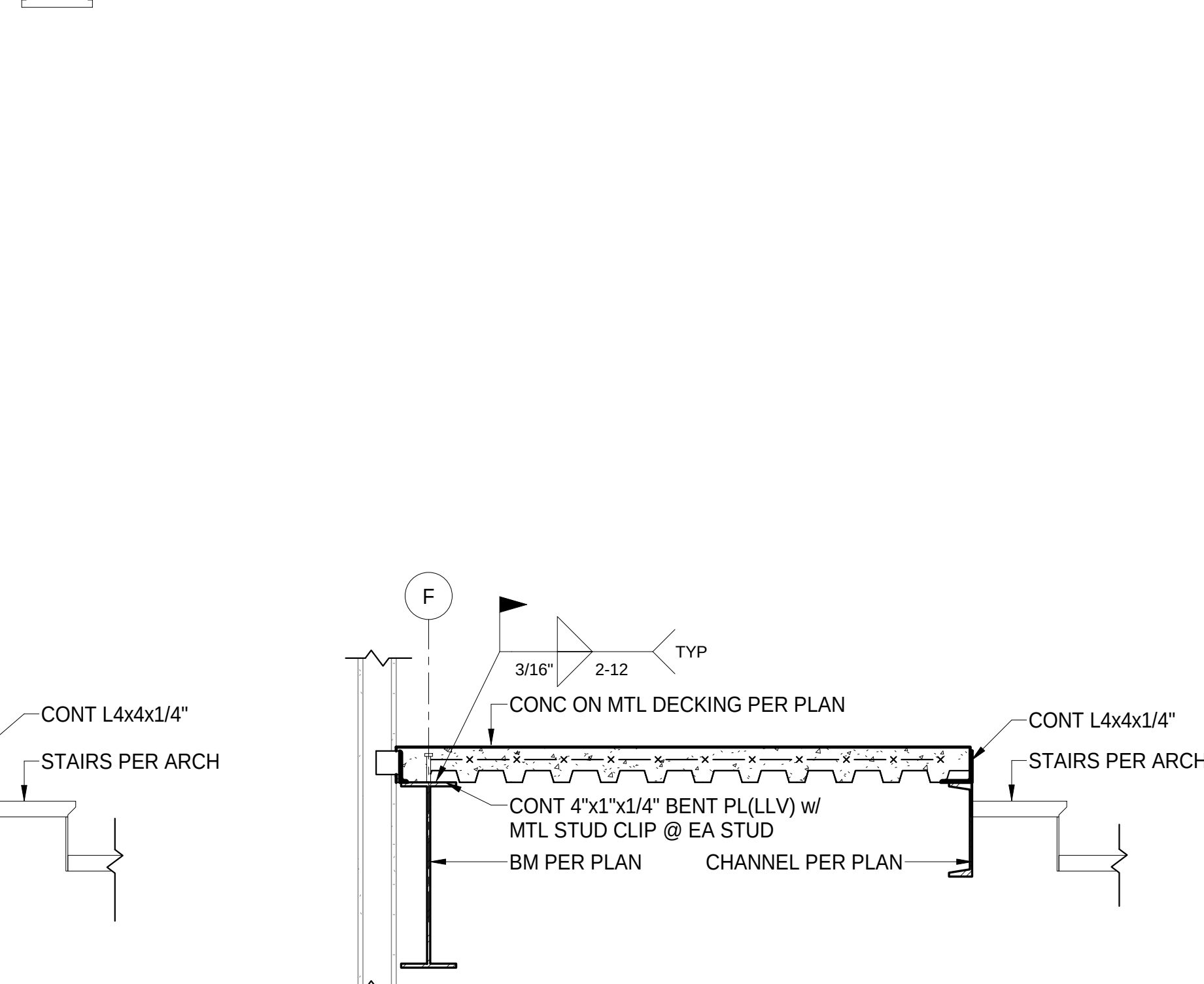
J FRAMING SECTION
S2.7 3/4" = 1'-0"



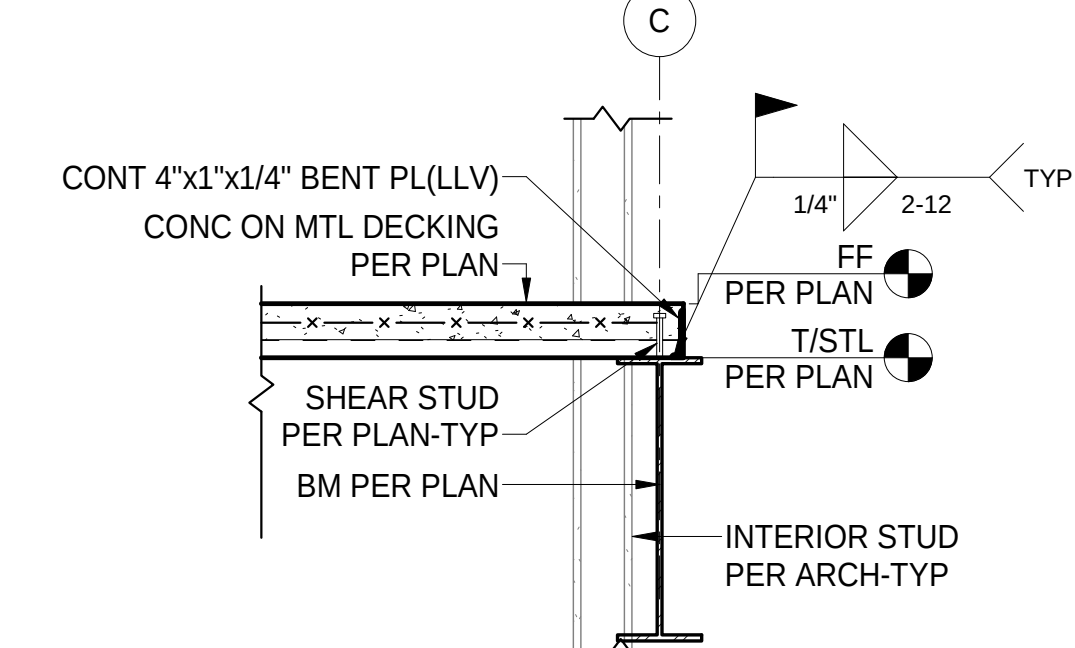
C STAIR FOUNDATION CALLOUT
S2.7 1/2" = 1'-0"



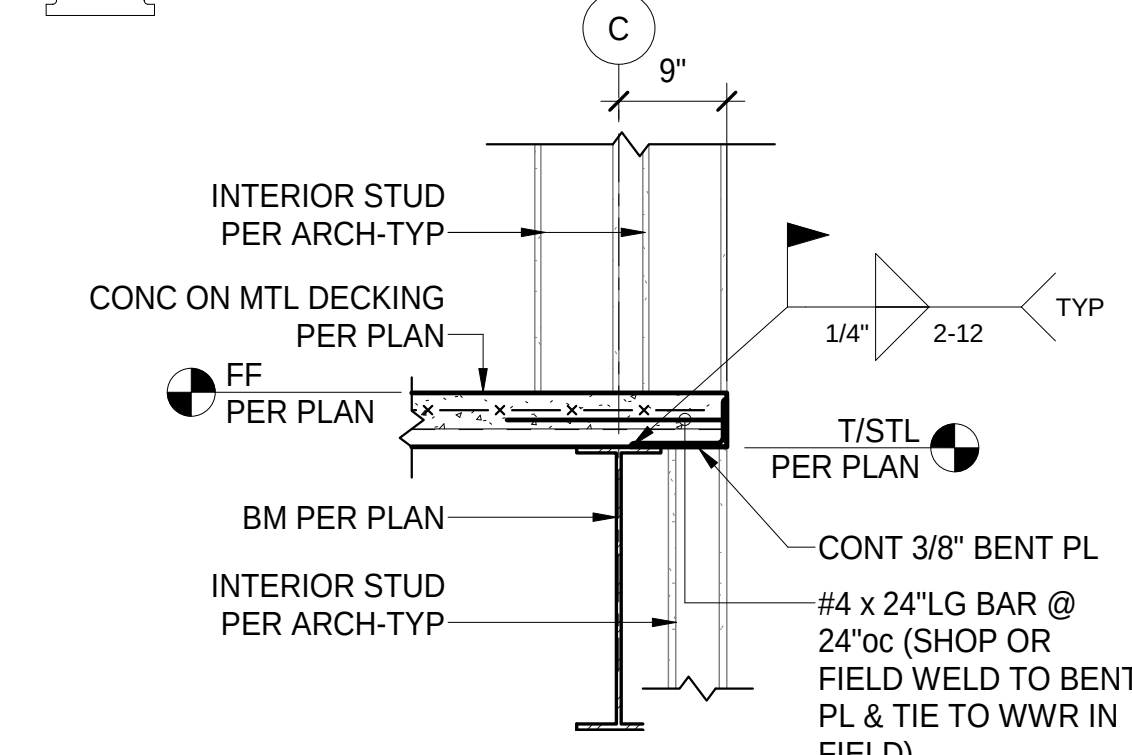
D STAIR FRAMING CALLOUT
S2.7 1/2" = 1'-0"



K FRAMING SECTION
S2.7 3/4" = 1'-0"



F FRAMING SECTION
S2.7 3/4" = 1'-0"



L FRAMING SECTION
S2.7 3/4" = 1'-0"

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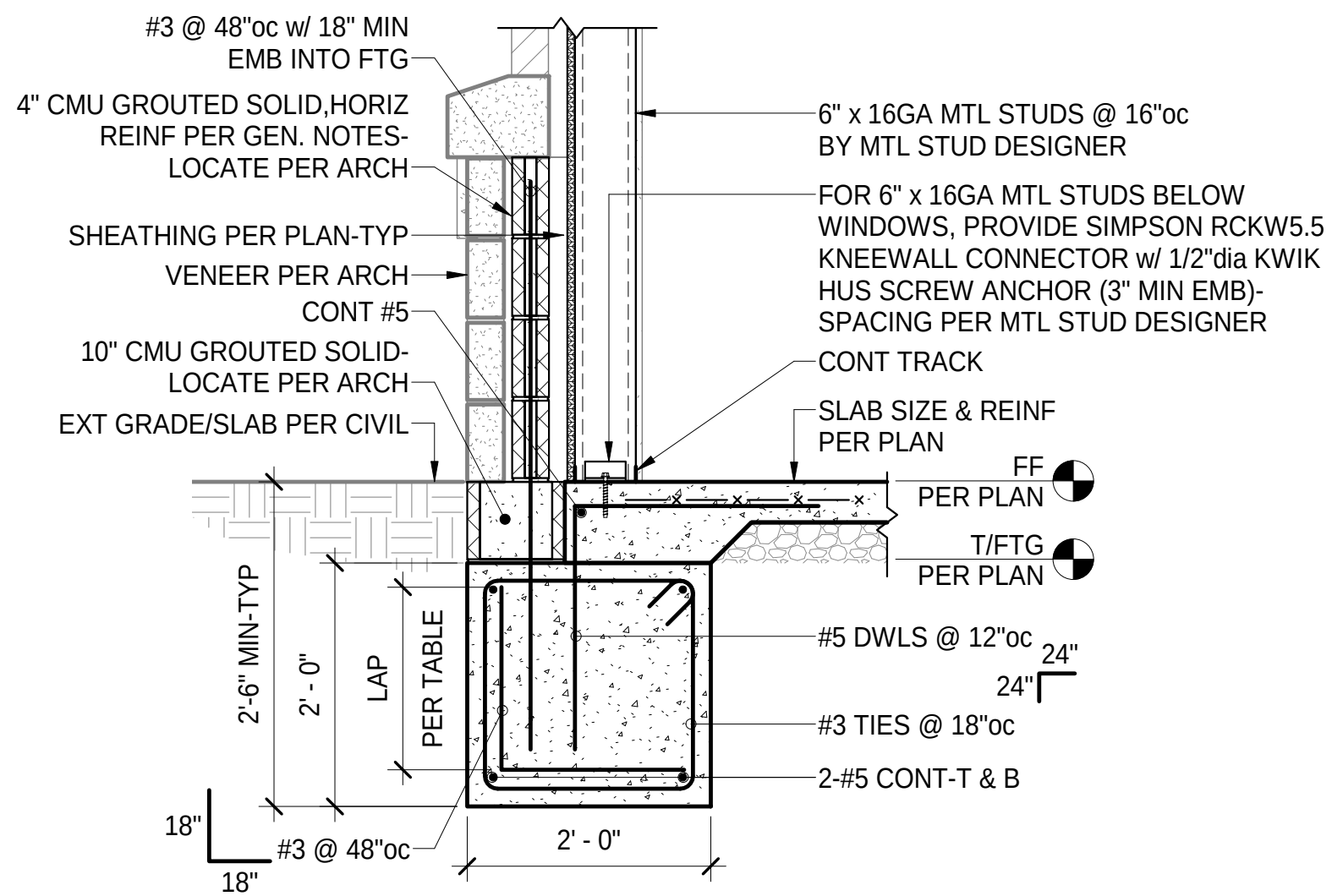
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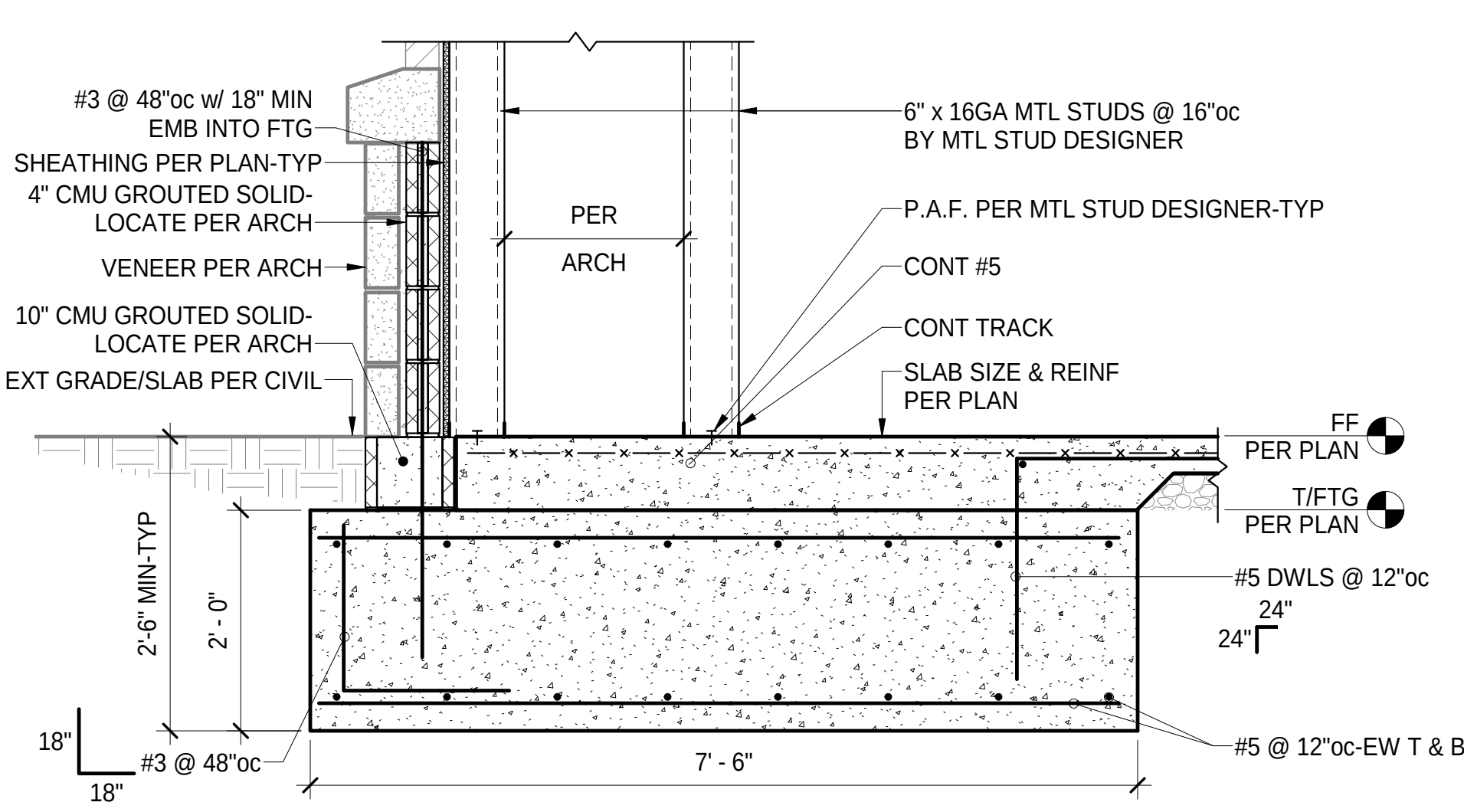
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S2.7

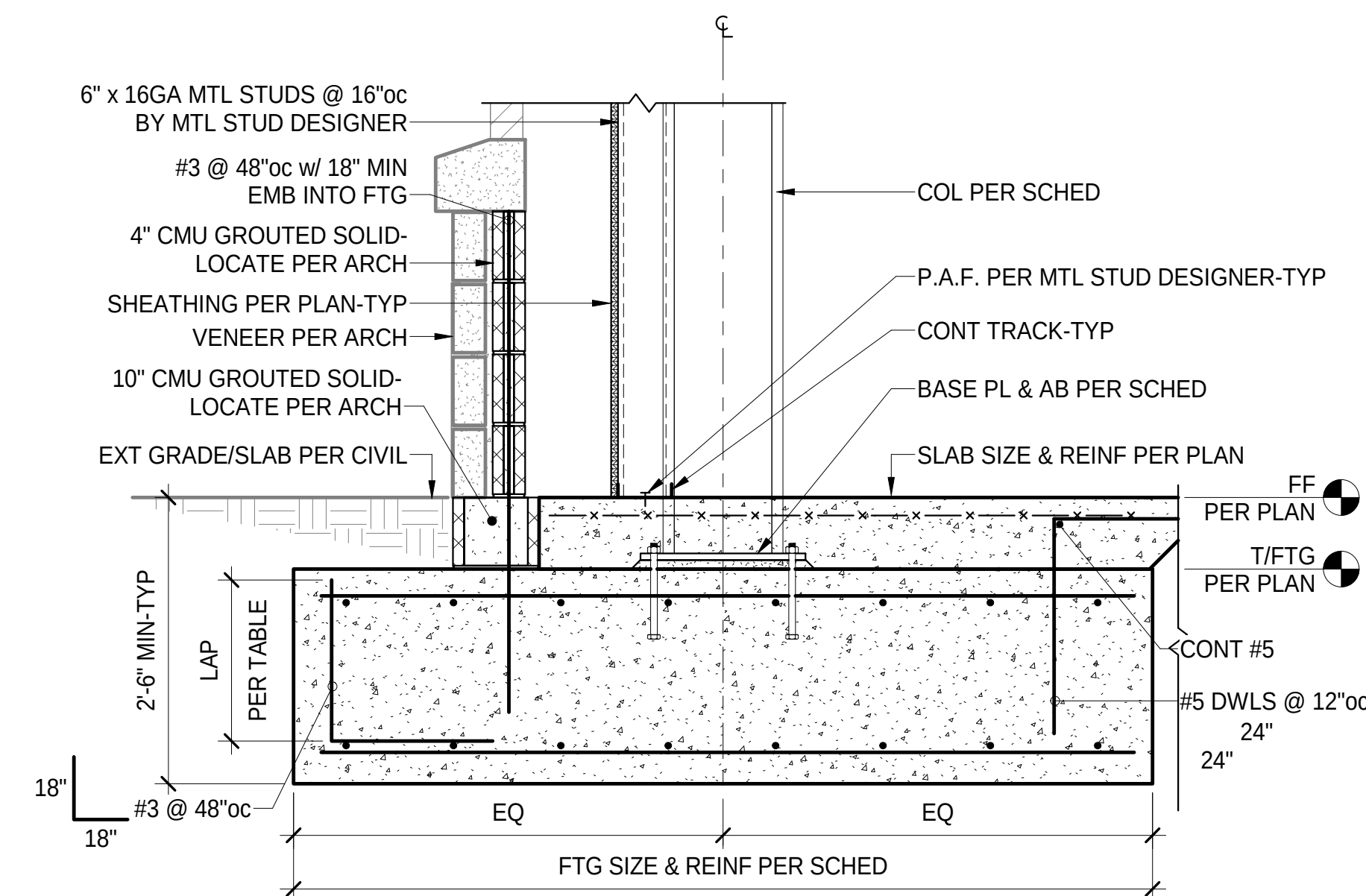
CALL OUTS @ STAIRWELL LOCATIONS



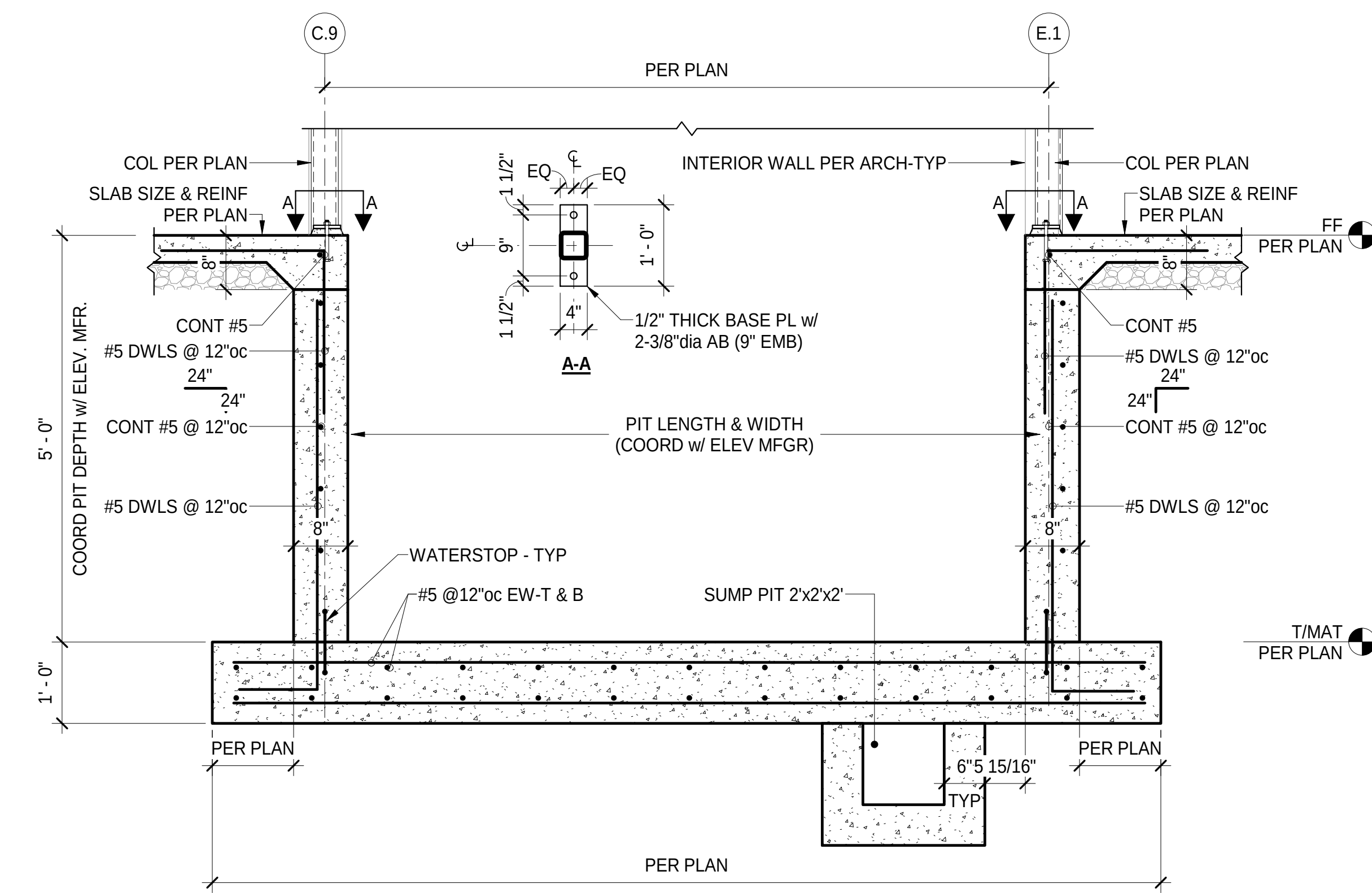
A FOUNDATION SECTION
S3.1 3/4" = 1'-0"



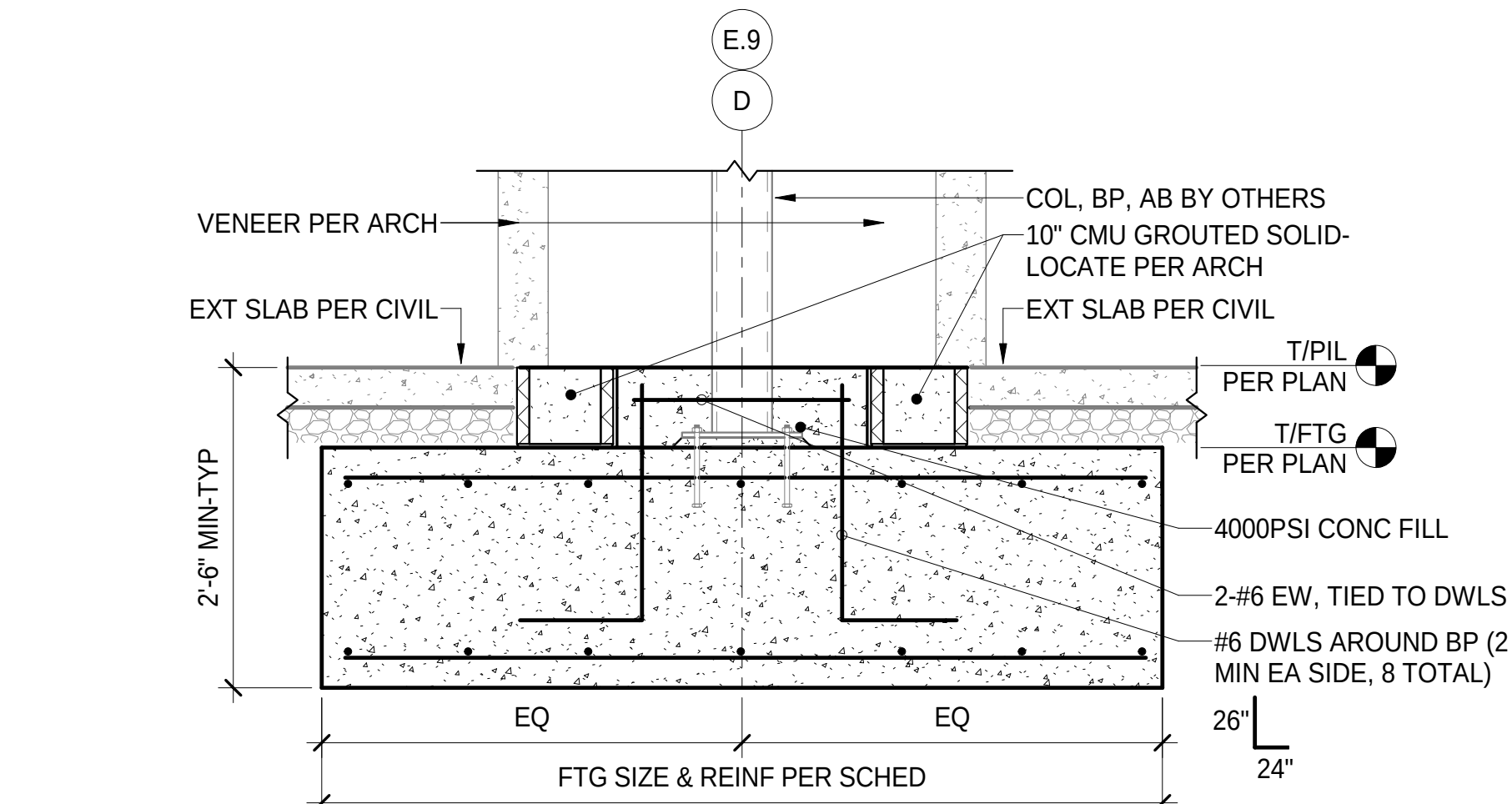
B FOUNDATION SECTION
S3.1 3/4" = 1'-0"



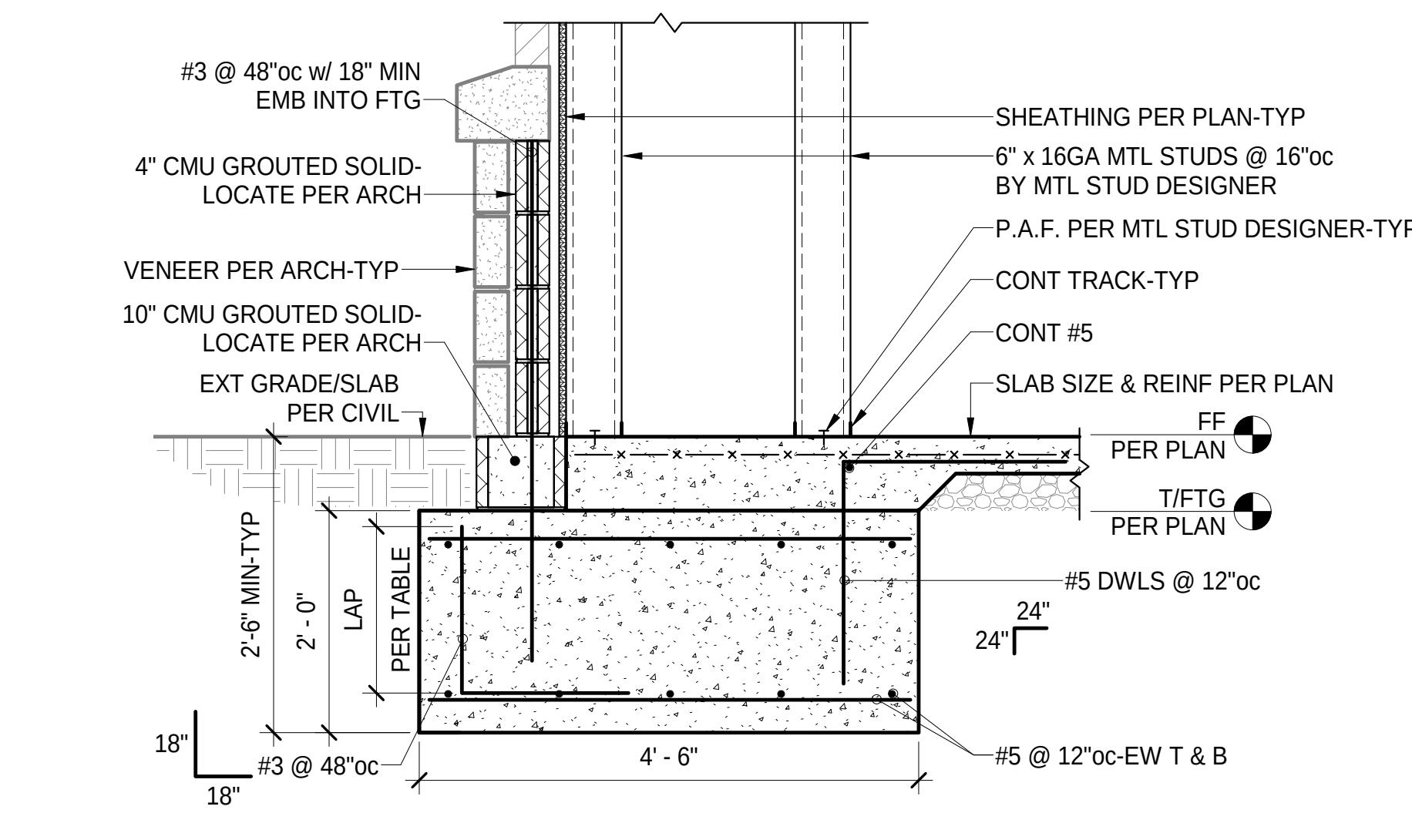
C FOUNDATION SECTION
S3.1 3/4" = 1'-0"



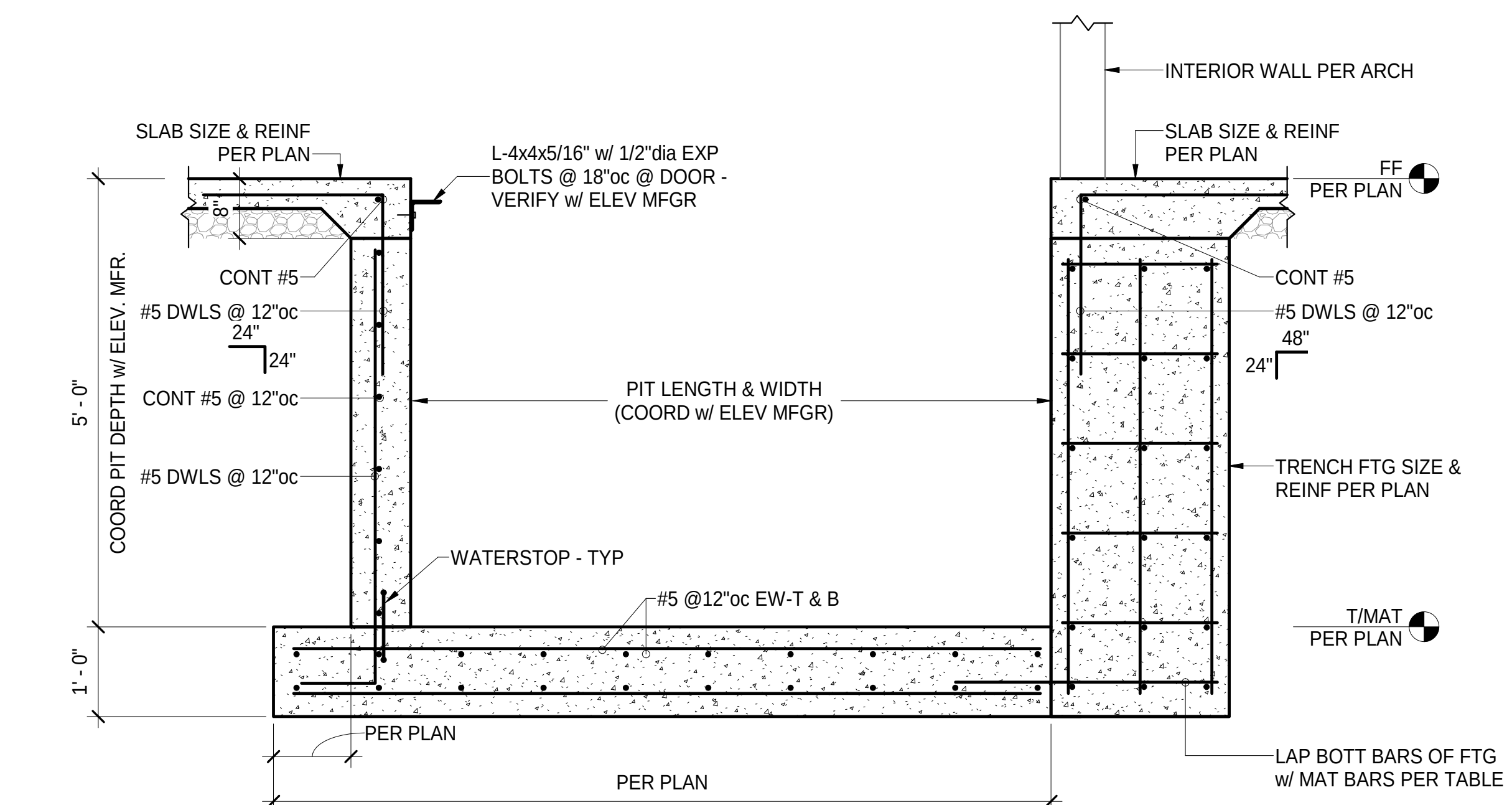
D ELEVATOR FOUNDATION SECTION
S3.1 3/4" = 1'-0"



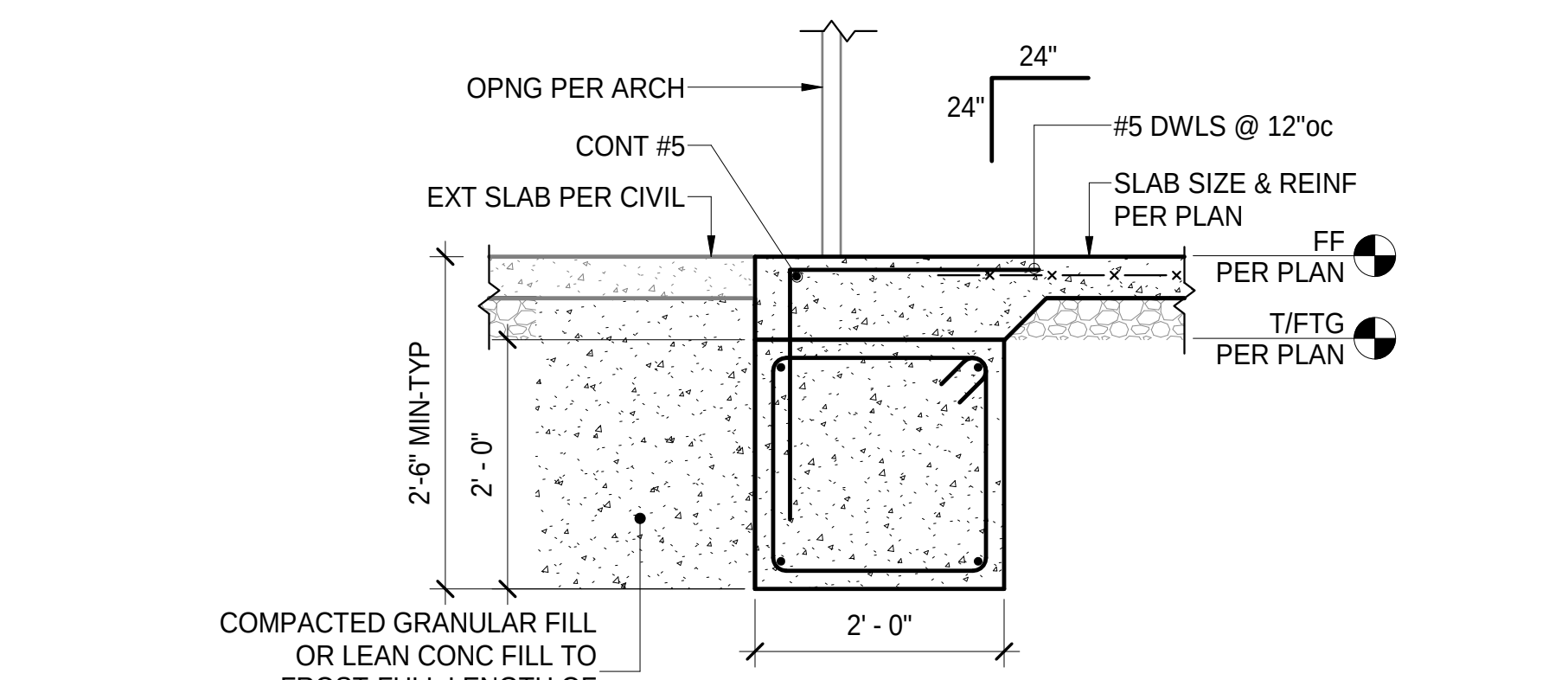
E FOUNDATION SECTION
S3.1 3/4" = 1'-0"



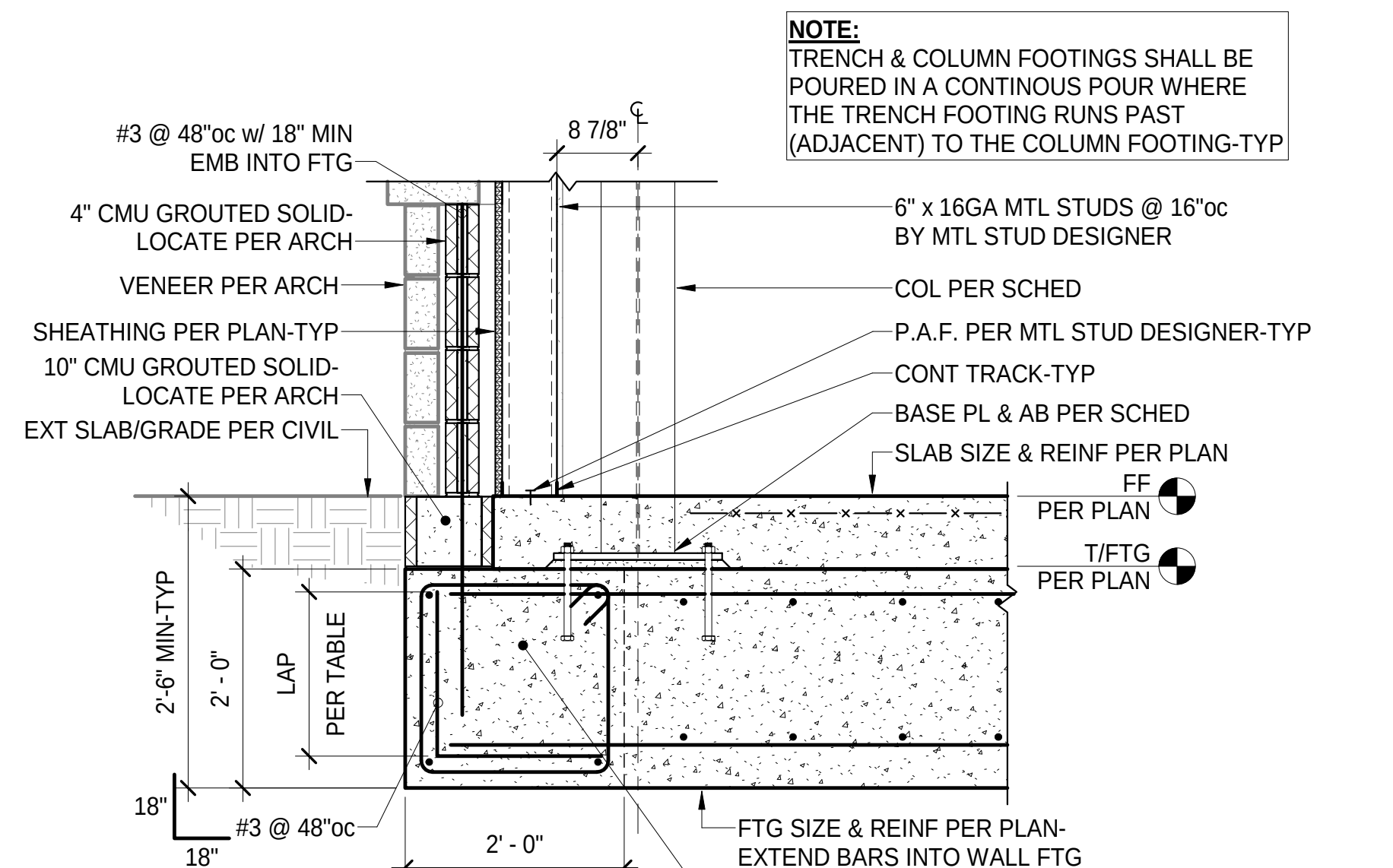
F FOUNDATION SECTION
S3.1 3/4" = 1'-0"



G ELEVATOR FOUNDATION SECTION
S3.1 3/4" = 1'-0"



H FOUNDATION SECTION
S3.1 3/4" = 1'-0"



J FOUNDATION SECTION
S3.1 3/4" = 1'-0"

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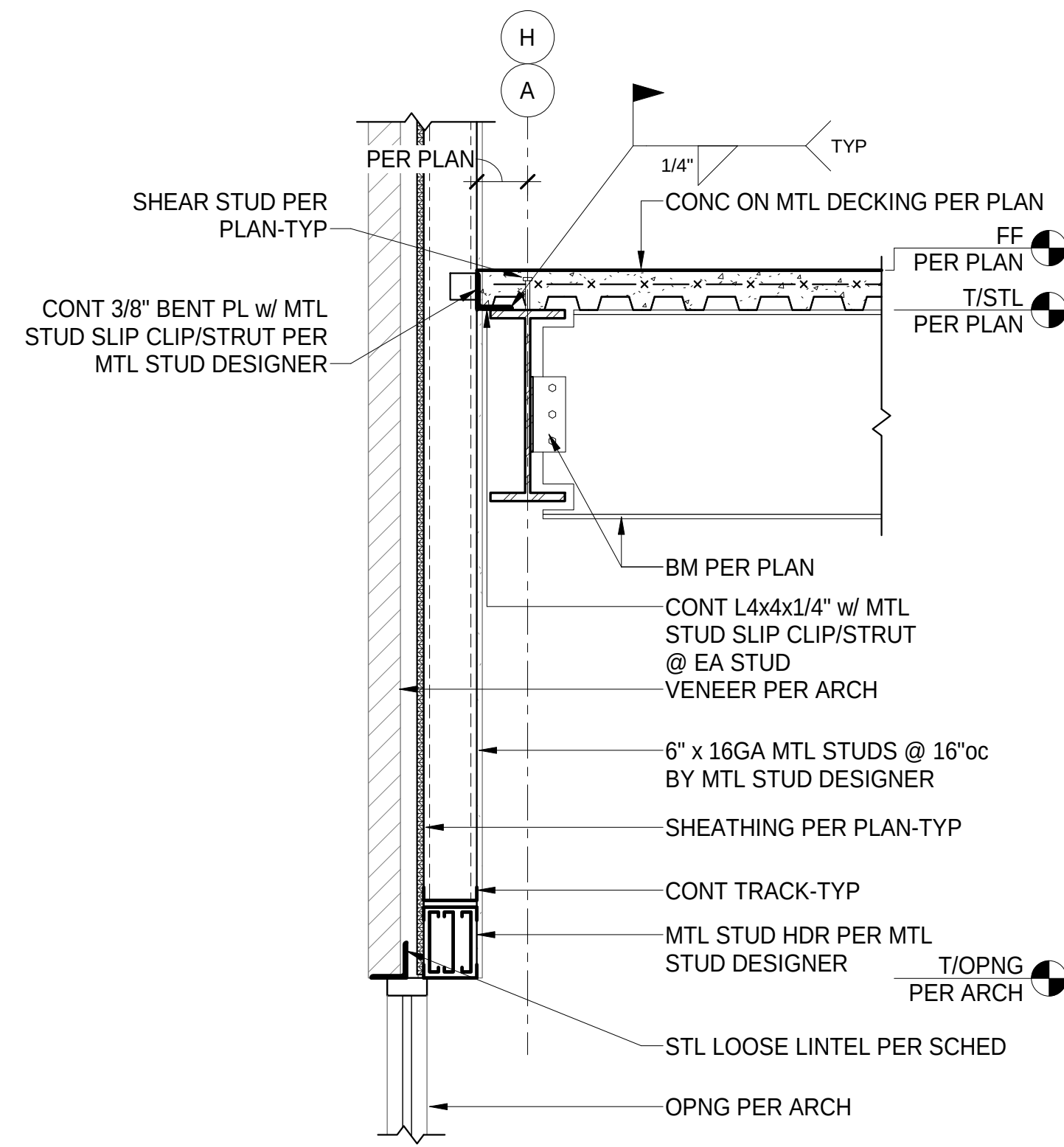
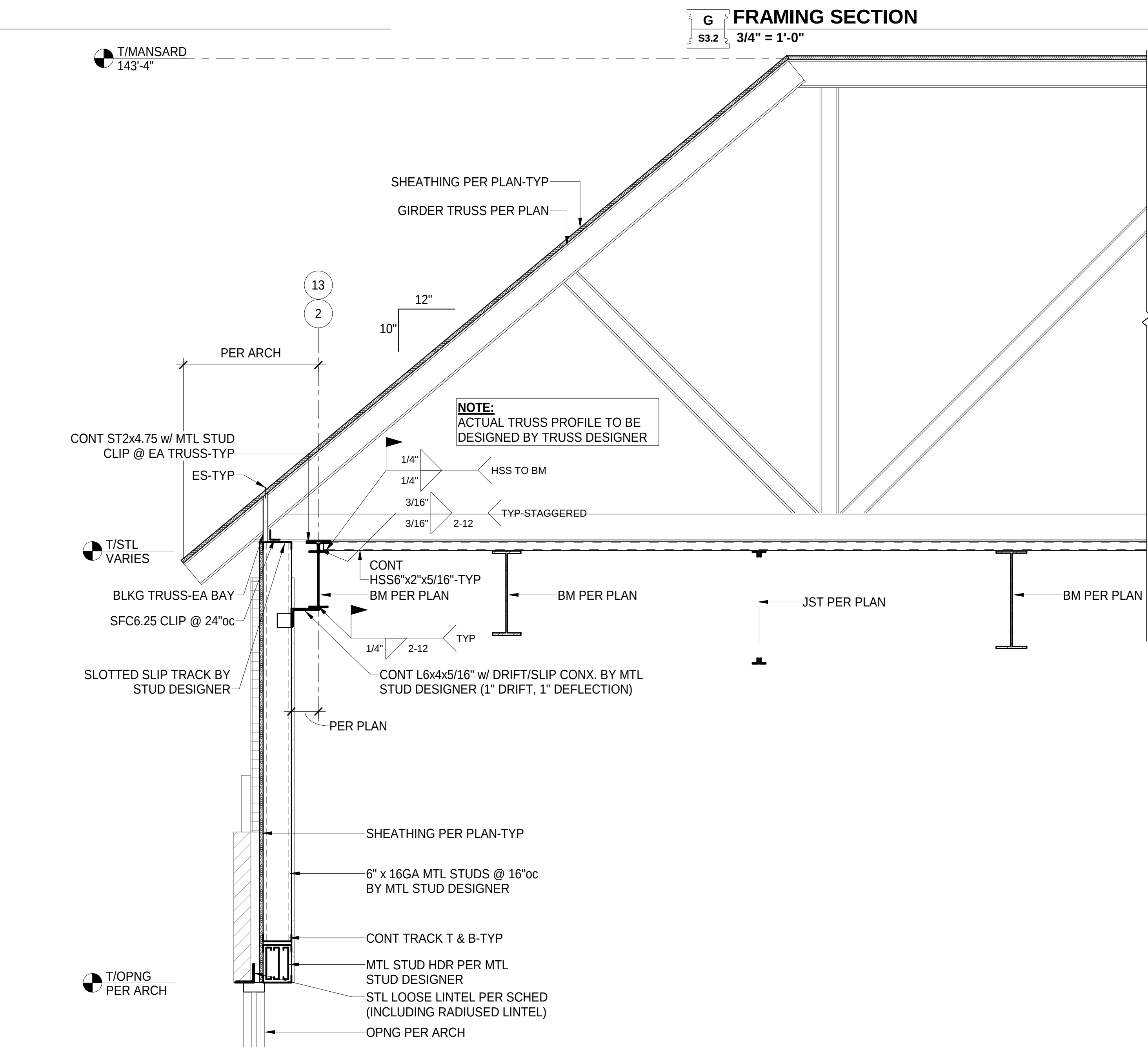
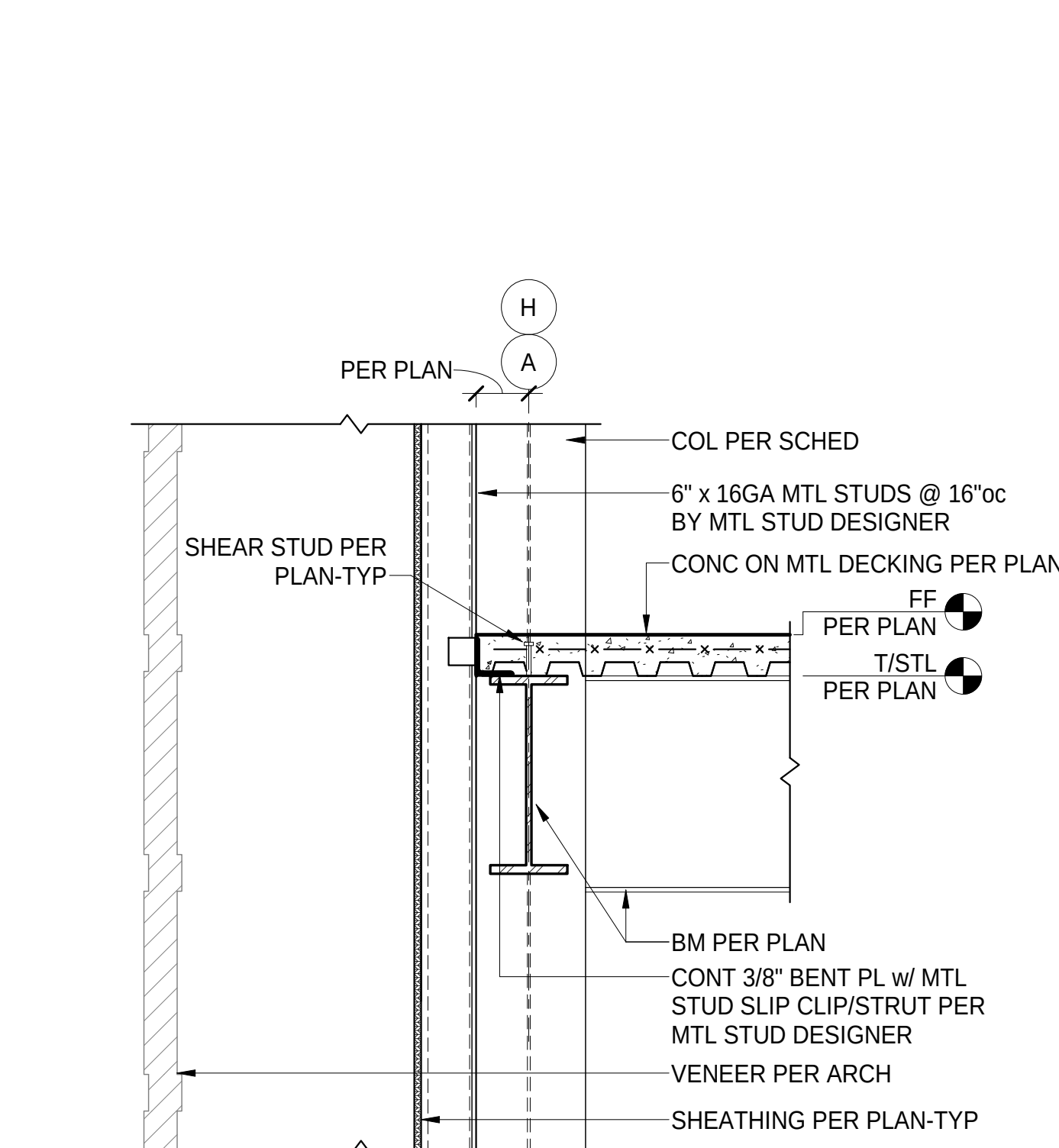
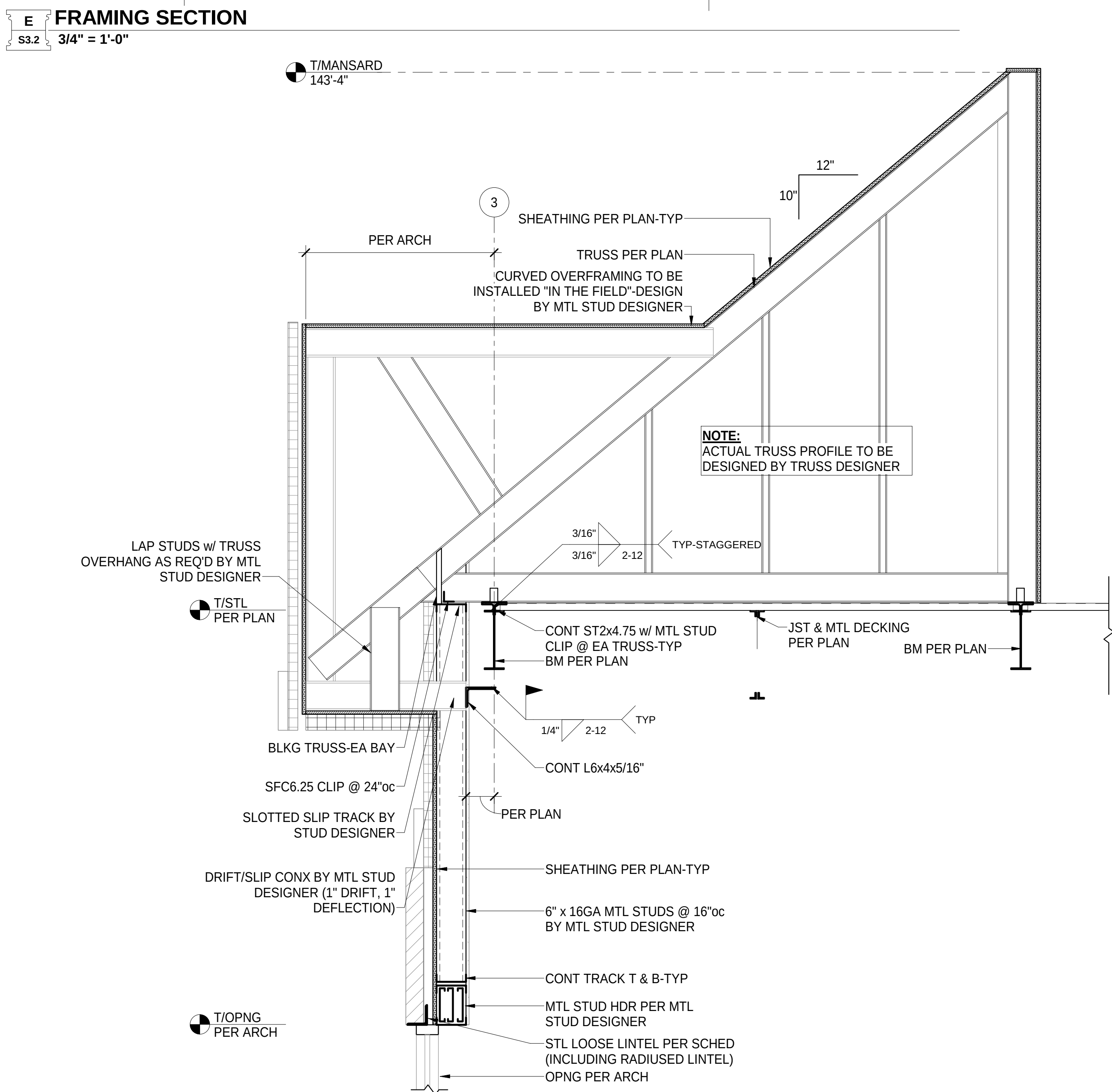
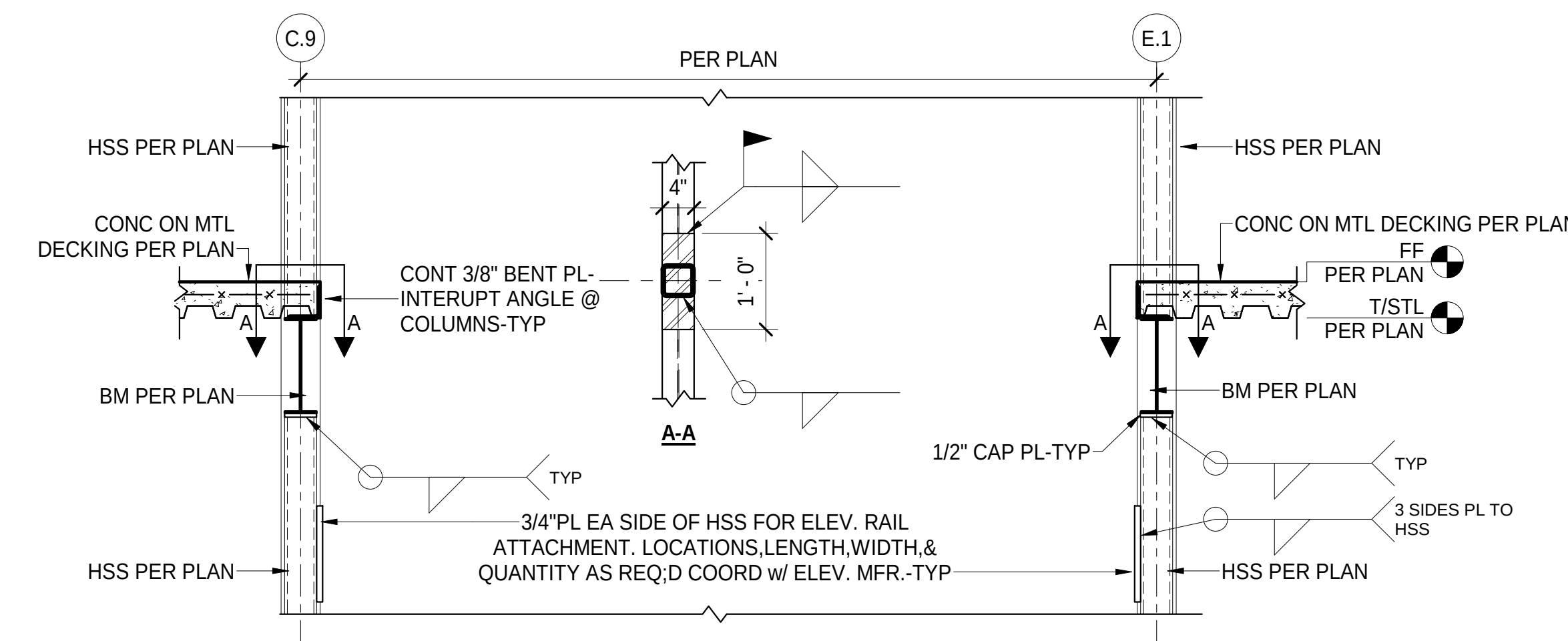
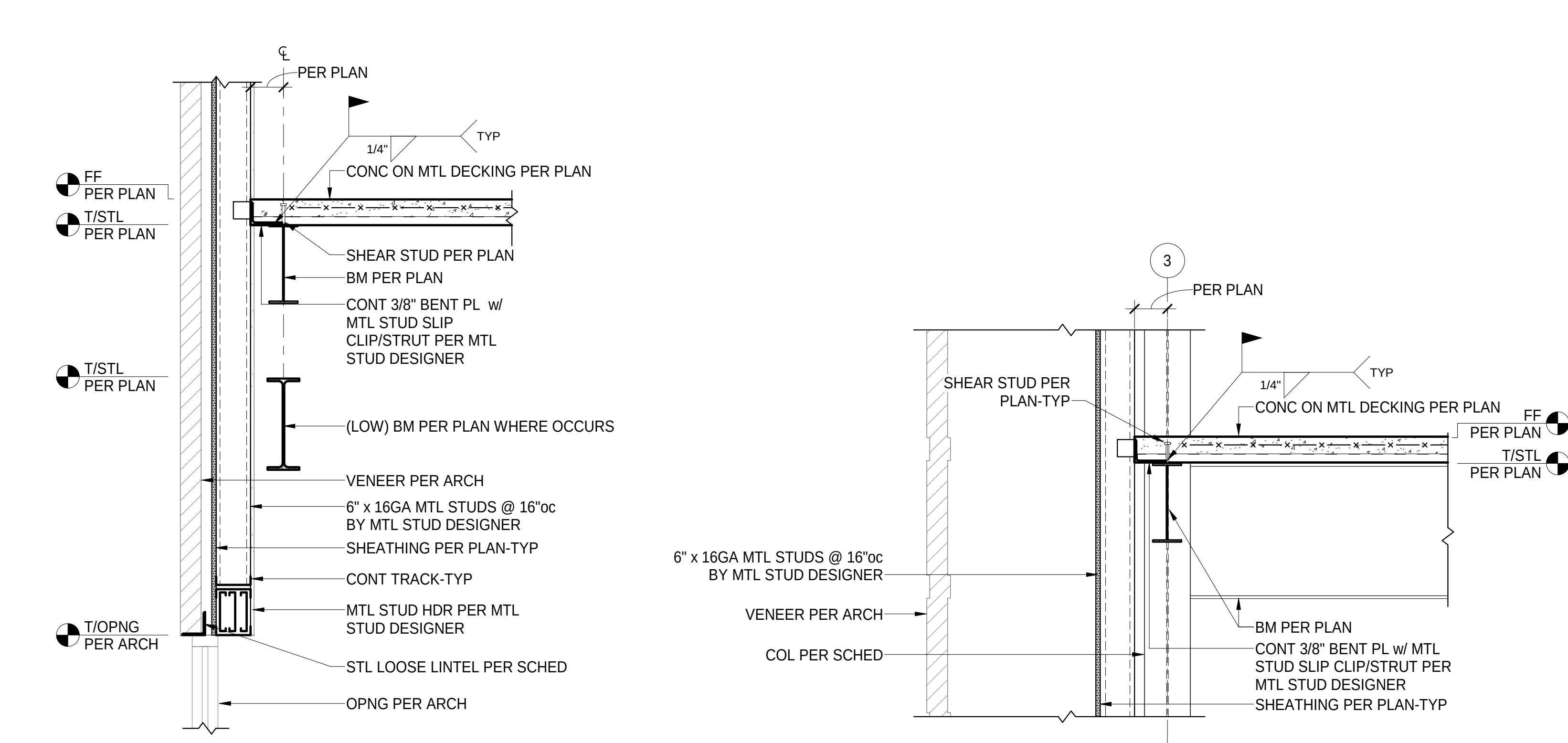
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S3.1
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